

INDIAN TARIFF BOARD

Written Evidence

recorded during the enquiry into the

SUGAR INDUSTRY

Volume III-B

Replies to Questionnaire and other communications received from the Imperial Council of Agricultural Research, officers under its control, Collectors of Customs, Director General of Commercial Intelligence and Statistics and other officers of Government, Railways, Commercial bodies and firms, Cultivators of cane, Confectioners, Sugar merchants, etc., etc

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GOVERNMENT OF INDIA.

DEPARTMENT OF COMMERCE.

RESOLUTION.

TARIFFS.

New Delhi, the 27th March, 1937.

No. 127-T. (1)/37.—The amount of protection afforded to the Sugar Industry by the duties imposed by section 2 of the Sugar Industry Protection Act, 1932, will determine on the 31st March, 1938, and section 3 of that Act provides that the Governor General in Council shall cause to be made by such persons as he may appoint in this behalf an enquiry to ascertain if the protection of Sugar Industry during the period from 31st March, 1938, to the 31st March, 1946, should be continued to the same extent or to a greater or lesser extent. The Government of India have decided that this enquiry should be undertaken by the Tariff Board and the following terms of reference have been framed for its guidance:—

- (a) The Board is requested to examine the measure of protection now enjoyed by the Sugar Industry and to report whether it is necessary to continue protection to this extent or to a greater or lesser extent;
- (b) In making its recommendations the Tariff Board will take all relevant considerations into account including that stated in part (b) of the Resolution adopted by the Legislative Assembly on the 16th February, 1923.

2. Firms and persons interested in the Sugar Industry or industries dependent on the use of sugar who desire that their views should be considered by the Tariff Board should address their representations to the Secretary of the Board.

ORDER.—Ordered that a copy of the above Resolution be communicated to all Local Governments and Administrations and the Political Officers, all Departments of the Government of India (except the Home Department), the Director General of Commercial Intelligence and Statistics, the Central Board of Revenue, the Indian Trade Commissioners, London, Hamburg and Milan, the Secretary, Tariff Board, the High Commissioner for India, London, His Majesty's Trade Commissioner in India, the Canadian Trade Commissioner in India, all the Chambers of Commerce and Associations, the French Trade Commissioner in India, Burma and Ceylon, the Secretary, Imperial Council of Agricultural Research and the Chief Controller of Stores.

Ordered also, that it be published in the *Gazette of India*.

2. Press Communique, issued by the Tariff Board on the 5th April 1937.

In the Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937, the Tariff Board has been directed to hold an enquiry to ascertain if the protection afforded to the Sugar Industry by the duties imposed by Section 2 of the Sugar Industry Protection Act, 1932, should be continued to the same extent or to a greater or lesser extent during the period from the 31st March, 1938, to the 31st March, 1946. Those Associations, firms or persons interested in the Sugar Industry or industries dependent upon sugar who desire that their views should be considered by the Board are requested to forward their representations (with six spare copies) to the Secretary to the Board so as to reach its office at 1, Council House Street, Calcutta, not later than the 1st May, 1937.



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No. 1. General Questionnaire.

- NOTE.—1. Reply to this questionnaire, if possible with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.
2. The answers may be confined to matters with which you are directly acquainted and on which you are in a position to supply the Board with detailed evidence.
 3. Unless otherwise required, it is requested that figures may be supplied from the working season of 1930-31 (or, if the factory started working after 1930-31, from the first year in which the factory started operation) up to the end of working season 1936-37.
 4. Figures may kindly be given per acre or per standard maund (82½ lbs.) as the case may be.
 5. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will any indication be given in the Tariff Board Report of the source of information or the name of any individual or factory except with permission.

PRODUCTION OF SUGAR.

Introductory.

1. In what year did your factory begin the manufacture of sugar and what is its full capacity?
2. What has been the output of your factory for each of the last seven years? If different classes of sugar are produced, please state the output of each class separately.
3. Do you consider that your factory is advantageously situated in respect of—
 - (a) cane supply, other raw materials such as limestone, etc., and important markets,
 - (b) facility of rail, road and other communications, and
 - (c) other considerations, such as adequate labour supply?
4. What is the process of manufacture of your factory? What are the respective advantages and disadvantages of sulphitation, carbonitiation and other processes?
5. What changes have been made in the lay-out of your factory and what extensions of plant or replacement of machinery have been made since 1930? Please state the amounts spent.
6. What further extensions or replacements are you in contemplation?
7. (a) What are the main factors which determine the size of an economic plant in the sugar industry?
 (b) What, in your opinion, is the smallest unit of production which can be operated economically under present-day conditions?
8. To what extent is sugar factory equipment now obtainable in India?
9. Are you satisfied with the technical assistance given by—
 - (i) the Imperial Institute of Sugar Technology,
 - (ii) the Industries Department of your Local Government?

Have you any suggestions to offer?

Raw Materials.

10. Do you undertake cultivation of sugarcane? If so, did you purchase your land outright or obtain it on lease? What difficulty, if any, did you experience in purchasing or leasing land?

11. Please give the following information:—

- (a) total area held,
- (b) average area under cane each year,
- (c) varieties of cane grown,
- (d) system of cultivation with special reference to fallows, rotation and manuring,
- (e) average yield per acre for different varieties of cane and their sucrose content, and
- (f) cost of cultivation per acre, in as much detail as possible.

12. What area have you set aside for—

- (a) experiment in cane cultivation,
- (b) production of seed for sale or free distribution to cultivators?

13. What experiments have you tried, specially in relation to early and late varieties of cane and manuring? How far has the Agricultural Department of your province been of assistance in this respect?

14. What changes have taken place during the last seven years in—

- (a) the quantity of cane available,
- (b) the quality of cane?

15. To what extent is cane liable to damage from frost, disease or insect pest? Can you give an estimate of the percentage of loss through these causes?

16. Is your factory assured of a sufficient supply of suitable cane? What are the principal varieties of cane crushed in your factory? Please state the field yield and sucrose content of each.

17. To what extent and in what circumstances is the supply of cane and the price at which it can be obtained influenced by the competition of other factories?

18. (a) Has the area under cultivation from which you ordinarily obtain your supply been subject to considerable variations?

(b) If so, to what causes do you attribute such variations and in particular, what is the effect of—

- (i) climatic conditions including excess or defect in rainfall,
- (ii) prices obtainable for sugar,
- (iii) prices obtainable for gur/jaggery,
- (iv) prices obtainable for alternative cash crop?

19. The production of sugarcane in 1936-37 is the highest on record. Is it in excess of requirements in your area and do you consider any restrictions necessary?

20. Please supply information, if available, as to the cost of cultivating one acre of sugarcane by an average cultivator and the outturn per acre. The cost should be stated in as much detail as possible.

21. What are the main difficulties of cane-growers in the cultivation of cane and its delivery to the factory and have you any suggestions to make?

22. (a) The previous Tariff Board came to the conclusion that compulsory acquisition or leasing of land for cultivation of cane by factories was impracticable in Indian conditions (pages 101 and 102 of the report). What are your views on this subject?

(b) Failing compulsory acquisition and leasing, are you in favour of allotting special areas to different factories for their supply of sugarcane? How could a system of 'zones' be worked?

23. If a 'zone' system were introduced, to what extent would you be prepared to give assistance to cultivators in the form of advances of cash or supply of seed and manure, etc., or the development of feeder roads?

24. Are you in favour of—

(a) fixation of a quota for sugar manufacture by factories,

(b) licensing of—

(i) new factories,

(ii) extensions of existing factories?

Please state your reasons.

25. As regards your cane supply, what is the proportion of—

(a) gate cane,

(b) rail cane, and

(c) tram-borne cane?

Have the proportion varied from year to year and, if so, for what reasons?

26. Is your gate cane entirely transported by carts or are lorries also used? What is the average weight of cane carried per cart? To what extent is it possible to improve the type of country cart by the substitution of rubber-tired carts or otherwise? If you have employed any improved type of cart, please state what additional maundage of cane can be carried.

27. Is the mileage of roads in your vicinity adequate? What is the condition of main and feeder roads?

28. From what distance is cane brought by road and what is the average time taken between cutting cane and delivery at factory? During road transport to what extent is cane protected from deterioration?

29. What is the average cost of transport of cane by cart per maund per mile? Do cane-growers employ their own carts or do they have to hire them? If they hire carts, what is the average cost of hiring?

30. Are any tolls or other dues levied on carts supplying your factory?

31. What are your arrangements for the continuous and uniform supply of gate-cane? What is the normal period of detention of a cart at your factory? What improvements in these arrangements have you made in recent years to ensure prompt delivery of cane and speedy release of carts?

32. From what distance is cane transported by rail to your factory? What is the average time taken between cutting of cane and delivery at factory? Are railway arrangements for transport of cane satisfactory?

33. On what basis are railway freights calculated? Have there been any changes in the rates in recent years? Would you prefer the substitution of a maundage rate per mile for a flat rate?

34. Have you any remarks to make on railway freight rates for other raw materials such as limestone or for manures?

35. What mileage of tramways serve your factory? What is the average cost of transport per maund? Is the charge borne by the factory or by the grower?

36. Do you consider a tramway system generally advantageous? Are there any special difficulties in laying out a tramway system?

37. Can you give an estimate of the extent of deterioration of cane owing to delay in delivery by road and rail?

38. What proportion of your cane is purchased—

(a) direct from cane-growers, and

(b) through contractors or agents?

39. Into what arrangement do you enter with cultivators for the supply of cane? Do you give advances in cash, or provide seed or manure or render any other assistance?

40. If your cane is not purchased direct from growers, what arrangements do you make and what commission do you pay?

41. Is any part of your cane supply obtained from cane-growing or cane-supplying associations and on what terms?

42. What are your arrangements for weighment of cane? Is payment made at the time of delivery of cane: if not, what is the normal interval between delivery of cane and payment?

43. Please state the prices at which you have purchased cane during the last seven years. Do prices tend to vary at different periods of the season?

44. Does the price at which you purchase sugarcane bear any definite relation to the price of sugar? If not, on what system are prices fixed?

45. To what extent and in what circumstances is the supply of cane and the price at which it is obtainable influenced by the price of gur/jaggery or khandsari sugar?

46. Have there been considerable variations in the price of gur/jaggery in the area in which you are principally interested? What are the causes of these variations?

47. If prices are fixed under the rules framed under the Sugarcane Act XV of 1934, have you paid prices in excess of the minimum rate and, if so, to what extent and why?

48. Do you consider the basis on which minimum prices are fixed satisfactory? Have you any suggestions to make?

49. How far do you consider it feasible to introduce a system of 'bonus' payments over and above the minimum rates for superior, early and late varieties of cane?

50. What has been the duration of the crushing season for each of the last seven years and what are the reasons for variations? Do you consider the period sufficiently long for economical working?

51. What are the possibilities of extending the crushing season by the introduction of early and late varieties of cane?

52. Are you satisfied with the assistance given by the Imperial Council of Agricultural Research, and the Agricultural and Co-operative Departments of your Government? Have you any suggestions to offer?

Labour.

53. What labour (i) skilled, (ii) unskilled, do you employ in your factory in (a) the crushing, and (b) the silent seasons?

54. To what extent is skilled labour imported from abroad or from other parts of India?

55. To what extent have you been able to replace skilled labour imported from abroad by Indian labour?

56. What arrangements have been made for housing your labour and for promoting its welfare?

Power.

57. Are you able to meet the whole of your requirements of fuel from the bagasse available in your factory? If not, to what extent is it necessary to supplement it and how? Please give figures for the amounts spent on fuel for the last seven years. Do you bale your surplus bagasse?

By-products.

58. What are the by-products produced in your factory?

59. Please give the outturn and price of molasses for the last seven years. What are the causes of variations?

60. What is the market for your molasses and what are your arrangements for transportation? Are railway facilities adequate? What are the freight rates from the factory to the market you supply?

61. If you do not sell your molasses, how do you dispose of them? Have you any other suggestions for the utilization of molasses?

62. Have you any outlet for your surplus bagasse if any, and have you any suggestions as to what uses bagasse can be put?

63. Have you any suggestions for the utilization of any other by-products?

Storage and Transportation of Sugar.

64. Please give figures of your stocks of sugar at the beginning and end of each crushing season since 1930.

65. What are your arrangements for the storage of sugar and what is the capacity of your godowns? Have you increased your storage capacity in recent years or do you contemplate doing so?

66. To what extent does your sugar deteriorate or suffer damage in storage? What are the causes of such deterioration or damage and how far do they depend on the quality of sugar?

67. What is your practice with regard to the disposal of damage sugar? Is it sold outright or reconditioned?

68. To what extent is the keeping quality of sugar susceptible of improvement?

69. To what extent is sugar damaged in transit from factories and to what is the damage due?

70. Have you experienced any difficulty in obtaining wagons for the transportation of sugar or delay in the delivery of sugar in the markets you supply?

71. Have you any suggestions for improvement of rail transport of sugar as for example in the type of wagon?

72. Please prepare a statement showing the prices at which during the last seven years the products of your factory have been sold at (i) ports and (ii) up-country centres. What are the freight rates to the markets you supply?

Capital Account and Overhead Charges.

73. Please send copies of your balance sheets from 1930 or from the commencement of the operation of your factory. If you prepare no balance sheets please give particulars of the book value of your property as it stood at the end of the last complete year, under the following heads:—

- (i) leases and concessions;
- (ii) lands;
- (iii) buildings;
- (iv) plant and machinery;
- (v) other assets.

74. Please state for each of the last seven years the particulars of the amount written off for depreciation. Are your rates for depreciation the same as allowed by the Income-tax Department? If not, state the difference.

75. Please state the amounts you have set aside for reserve fund during the last seven years.

76. Please prepare a statement for the last seven years showing the actual amount distributed as dividends on each class of capital (preferred, ordinary and deferred).

77. How is your working capital provided and at what rate are you able to borrow?

78. Please state the annual amount of your head office expenses and the managing agents' commission. How is the agents' commission determined?

79. What rate of dividend do you consider a fair return on capital?

Efficiency of Production.

80. In order to enable the Tariff Board to judge the extent of progress in efficiency attained by factories since 1930, the Board requires full information as to the cost of manufacture and recovery rate as far as possible in the annexed forms. (Forms will follow separately.)

81. What reductions have you been able to make in your works costs since 1930 by (i) extending your plant, (ii) installing more efficient machinery, (iii) reducing overhead charges, and (iv) any other measures of economy?

82. To what extent is there room for further reduction of works costs or improvement in recovery rates?

Marketing.

83. What are the principal sugar marketing centres in which you deal?

84. What are the usual arrangements in the sale of sugar between (a) manufacturers and dealers, (b) dealers and retailers?

85. Is the present sugar contract form suitable in your opinion? Have you any suggestions?

86. What have been (a) the wholesale, and (b) retail prices of sugar in the area covered by the distributing centres with which you are acquainted, for the last seven years? (Figures for Indian factory sugar and imported sugar may be furnished separately, with details as to quality.)

87. Does the difference between wholesale and retail prices tend to fluctuate widely? If so, what is the reason?

88. What are the storage arrangements made by dealers? To what extent does sugar deteriorate in storage?

89. Does Indian sugar deteriorate more rapidly than Java or other imported sugar? Have there been any improvement in the keeping quality of Indian sugar?

90. Is Java or other imported sugar preferred to Indian sugar? If so, by what class of consumers and why?

91. Do you consider the present quality of Indian sugar equal to the quality of Java or other imported sugar? If not, in what respects is Indian sugar inferior?

92. The sugar manufacturing season being limited to about one-third of the year, to what extent are stocks carried—

(a) by manufacturers,

(b) by dealers?

How is the carrying of stocks financed? What are the usual arrangements with banks or other financial agencies?

93. Do you consider that a marketing survey of the sugar industry would be advantageous?

94. Do you favour a central all-India selling organization?

95. Are you in favour of the standardization of Indian sugar? If so, on what basis would you suggest standardization?

96. (a) To what extent has actual business been done by you on the basis of the sugar standards prescribed by the Director, Imperial Institute of Sugar Technology?

(b) Has any use been made of these standards for grading purposes?

97. Have you any suggestions to offer for increasing the usefulness of these standards?

98. Have you any other suggestions for the improvement of sugar marketing in India, such as the establishment of a 'futures' or 'terminal' market?

99. What is your estimate of the normal consumption of sugar in India? What are the possibilities of increasing consumption?

100. To what extent is factory sugar replacing gur, specially in the sweetmeat trade?

101. Under what conditions is there a possibility of starting subsidiary industries, such as manufacture of sweets and syrups, fruit-preservation and canning, etc.?

102. Please state the price of imported sugar during the last seven years; if possible give f.o.b. prices with the following items separately:—

- (a) freight,
- (b) insurance and trade charges,
- (c) customs duty, and
- (d) landing charges.

If this is not possible, please give c.i.f. prices, customs duty and landing charges.

NOTE.—As far as possible, prices of different qualities of sugar should be shown separately.

103. Have you any reason to believe that imported sugar has been landed at unremunerative prices in any year since 1930? If so, please state your reasons.

104. Has there been any export of Indian sugar (a) by sea, and (b) by land? Under what conditions do you think such export is feasible?

105. What has been the effect of (i) the Sugar Excise Duty of 1934, (ii) the addition made in 1937?

106. What are the marketing arrangements for molasses?

107. Is there any export of Indian molasses and to what countries? Are there any possibilities of the development of export?

Claim for Protection.

108. Since 1932 the rates of duties on sugar, sugarcandy and molasses imported into India have been as follows:—

Sugar—

Rs. 9-1 per cwt. from April, 1932.

Rs. 9-4 per cwt. from March, 1937.

Sugarcandy—

Rs. 10-8 per cwt. from February, 1934.

Molasses—

31½ per cent. *ad valorem* from April, 1932.

To what extent has the measure of protection enjoyed by the industry been effective?

109. The Board has been asked to consider whether it is necessary to continue protection to the present extent or to a greater or lesser extent. Please state your views, giving reasons for any rates you may suggest for the remaining period of protection, i.e., from 1st April, 1938 to 31st March, 1946.

110. What forms of assistance other than a protective duty do you consider necessary for the development of the industry? Please give your reasons in full.

111. What has been the effect of import duty on molasses? Has the duty adversely affected any industry in India?

No. 2. Questionnaire for Local Governments.

NOTE.—1. Reply to this questionnaire, if possible with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. Figures may kindly be given per acre or per standard maund (82½ lbs.) as the case may be.

1. What has been the area under sugarcane in your province during the last seven years? What improved varieties are grown and what has been the approximate acreage under each?

2. How would you classify the different areas in your province in respect of differences in climatic conditions, methods of cultivation, etc. How much of the crop in each area is (a) irrigated, (b) unirrigated?

3. What are the irrigation rates in your province and on what basis are they determined? How have they varied in the last seven years?

4. Can you give an estimate of the cost of cultivation of cane to the cultivator in different areas (irrigated and unirrigated separately)? Has there been any variation in the cost in the last seven years? What is the average yield per acre and the average sucrose content?

5. Under present conditions what would you consider a fair price of sugarcane to the growers?

6. Has there been a marked variation in sugarcane cultivation in any specific area during the last seven years? If so, what are the causes of variations and how far in your opinion are they due to—

- (i) climatic conditions including excess or defect in rainfall,
- (ii) prices obtainable for sugar,
- (iii) prices obtainable for gur/jaggery, and
- (iv) prices obtainable for alternative cash crops?

7. Do you consider that there was overproduction of sugarcane in the season 1936-37 and in what areas? If so, would you suggest any scheme for restricting the area under cane?

8. What are the other cash crops in your province? How far do they form an alternative to sugarcane? If possible, please give an estimate of return per acre to an average cultivator from the various cash crops.

9. Can you give an estimate of the amount spent during the last seven years for the extension and improvement of sugarcane cultivation in your province?

10. What is the amount of contribution your province receives from the Government of India out of sugar excise or otherwise and how is it utilized? Do you consider it adequate?

11. Please give a brief account of—

- (i) the research work that has been undertaken in regard to sugarcane and the control of disease,
- (ii) measures adopted for the introduction of improved varieties of cane, improved methods of cultivation, use of manure, etc., during the last seven years.

12. What assistance has been received from—

- (i) Imperial Council of Agricultural Research,
- (ii) Coimbatore Sugarcane Research Station, and
- (iii) Imperial Institute of Sugar Technology?

Are funds for research, both agricultural and technological, adequate?

13. To what extent have factories co-operated with the Agricultural Department of your province in the introduction of new varieties of cane and improvement in methods of cultivation?

14. Of the sugarcane grown in your province how much do you estimate is—

- (a) crushed in sugar factories,
- (b) utilised by open pan factories and khandsaris,
- (c) turned into gur, and
- (d) used for chewing purposes and for seed?

15. What are the main difficulties of cane-growers in the cultivation of cane and its delivery to the factory?

16. To what extent is the Co-operative Department rendering assistance to cane-growers? How far have the cane-growers been organized and what Cane Growing and Cane Supplying Societies are working?

17. Are minimum prices fixed for sugarcane in your province under the Sugarcane Act XV of 1934? If so, what is the basis of their fixation? Has the system worked satisfactorily?

18. To what extent is the price paid by the factories influenced by competition of other factories?

19. How far do you consider it feasible to introduce a system of bonus payments over and above the minimum rates for superior, early and late varieties of cane?

20. What is the average cost of transport of cane by carts per maund per mile in different areas of your province?

21. Do cane-growers employ their own carts or do they have to hire them? If they have to hire carts, what is the average cost of hiring?

22. Do you consider rail, road and tramway facilities for transport of cane adequate? What assistance has been given in your province towards the development of feeder roads and tramway systems?

23. What assistance has been rendered by the Industries Department to sugar factories?

24. What particular assistance has been rendered to any individual factory in your province by the provision of capital, concessions in regard to land, water rate charges, etc.

25. What co-operative sugar factories are there in your province and how are they working?

26. Are conditions of labour in factories satisfactory?

27. Please supply (i) the wholesale, and (ii) the retail prices of sugar in the important markets of your province for the last seven years.

28. Has there been considerable variation between the wholesale and retail prices? If so, what are the reasons?

29. What is your estimate of the normal consumption of sugar in your province and what are the possibilities of increasing it?

30. What manufactories of confectionery are there in your province and in what places? What is the material used.

31. Do you consider the development of the sugar industry has reached a stage in your province to necessitate—

- (i) introduction of "zone" system by allotting special areas to different factories for their supply of cane, or
- (ii) fixation of a quota for sugar manufacture by factories, or
- (iii) licensing of (a) new factories, and (b) extensions of existing factories?

32. What are the possibilities of starting any subsidiary industry such as manufacture of sweets and syrups, fruit preservation and canning, etc., in your province?

33. What is your estimate of production of gur from sugarcane for the last seven years?

34. From what material, other than cane, e.g., date, palmyra, cocoanut palms is gur/jaggery produced in your province and what is your estimate of production?

35. Please state the prices obtained for various kinds of gur/jaggery in different areas during the last seven years. What are the causes of variations and how far are they due to—

- (i) changes in acreage under sugarcane;
- (ii) climatic and other conditions affecting the crop; and
- (iii) competition from Indian factory sugar.

36. Please give an estimate of the total annual consumption of gur/jaggery in your province since 1930. To what causes do you attribute the variations?
37. From what areas is gur/jaggery imported into your province? Please give approximate figures of imports during the last seven years?
38. To what areas is gur/jaggery exported from your province? Please give approximate figures of exports during the last seven years.
39. Is there any relation between the price of gur/jaggery and Indian factory sugar?
40. To what extent is Indian factory sugar replacing gur/jaggery in your province?
41. Please give an account of any research work undertaken towards improvement in the methods of manufacture of gur/jaggery.
42. Can you give the number of (i) open pan factories, and (ii) khandsars in your province, and an estimate of their outturn of sugar, gur and molasses?
43. Please give an estimate of the cost of manufacture of sugar in open pan factories and khandsars.
44. To what extent has competition from factory sugar resulted in the closing down of open pan factories and khandsars in recent years?
45. The last Tariff Board was of opinion that an effort might be made to support the khandsari industry, both as holding an important position in the agricultural system and as constituting an outlet for surplus cane (page 51 of the Report). How have conditions changed since 1930? What are your views as to the future of the industry?
46. What research work has been undertaken in your province to improve the open pan system and the manufacture of rab?
47. To what extent, in your opinion, has (i) the Sugar Excise Duty of 1934, and (ii) the additional duty imposed in 1937, affected—
 - (a) the cane-grower;
 - (b) the manufacturer;
 - (c) the dealer, and
 - (d) the consumer?
48. From the point of view of the consumer, what has been the effect of protective duties?
49. Has any industry in your province dependent on the supply of sugar products or molasses been affected by the protective duties?
50. How are your statistics of acreage, production and prices of sugar and gur, etc., prepared and what is the degree of accuracy?
51. Have you any comments to make on any of the points raised in the other questionnaires?

No. 3. Questionnaire for manufacturers of sugar by the open pan system and Khandsars.

- NOTE.—1. Reply to this questionnaire, if possible, with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.
2. The answers may be confined to matters with which you are directly acquainted and on which you are in a position to supply the Board with detailed evidence.
 3. Unless otherwise required, it is requested that figures may be supplied from the working season of 1930-31 (or if the factory started working after 1930-31, from the first year in which the factory started operation), up to the end of working season 1936-37.
 4. Figures may kindly be given per acre or per standard maund (82½ lbs.) as the case may be.
 5. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such

information will not be published. In no case will an indication be given in the Tariff Board Report of the source of information or the name of any individual or factory except with permission.

1. Do you manufacture sugar directly from cane, or from juice or from rab? What is your process of manufacture?

2. What are your arrangements for obtaining cane/juice/rab? If you do not deal directly with the grower, who is your intermediary and what commissions do you pay?

3. Please state the average prices paid during each of the last seven years for one standard maund (82½ lbs.) of cane/juice/rab.

4. How far are variations in price of cane/juice/rab accounted for by—

(a) prices obtained for cane supplied to vacuum pan factories in your vicinity;

(b) gur prices?

5. Please give the following data for your process:—

(i) the amount of juice extracted per 100 maunds of cane;

(ii) the amount of rab manufactured from 100 maunds of juice;

(iii) the amount of sugar extracted from 100 maunds of rab.

NOTE.—Figures may kindly be given in standard maunds of 82½ lbs.

6. How many qualities of sugar do you manufacture? What has been your output for each quality during the last seven years?

7. Please give in as much detail as possible your cost of manufacture of sugar during the last seven years.

8. What are the chief markets to which you supply sugar and what are your arrangements for distribution?

9. Please state the prices obtained for the various classes of sugar manufactured for the last seven years.

10. Is your sugar preferred to (i) gur, and (ii) Indian factory sugar? If so, why and by what class of consumers?

11. To what extent, if any, is Indian factory sugar replacing your sugar?

12. To what extent has competition from factory sugar resulted in closing down of open pan factories and khandsars in your neighbourhood in the last seven years?

13. How has (i) Sugar Excise Duty of 1934, (ii) addition imposed in 1937, affected you?

14. What are the main difficulties of the open pan/khandsari industry? Have you any suggestions for overcoming them?

No. 4. Questionnaire for sugar refineries.

NOTE.—1. Reply to this questionnaire, if possible, with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. The answers may be confined to matters with which you are directly acquainted and on which you are in a position to supply the Board with detailed evidence.

3. Unless otherwise required, it is requested that figures may be supplied from the working season of 1930-31 (or if the factory started working after 1930-31, from the first year in which the factory started operation), up to the end of working season 1936-37.

4. Figures may kindly be given per acre or per standard maund (82½ lbs.) as the case may be.

5. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will an indication be given in the Tariff Board Report of the source of information or the name of any individual or factory except with permission.

1. In what year did your factory first commence manufacture and what is your maximum capacity? Does your factory refine only or does it also crush cane?

2. From what materials do you refine sugar? What qualities of sugar do you make?

3. What has been your output of sugar during the last seven years? To what causes do you attribute variations?

4. Are you able to obtain sufficient quantity of raw material and at what prices?

5. What are your sources of supply and what is the method of transportation?

6. What has been your average recovery of sugar during the last seven years? How far do you consider an improvement possible (a) in the method of manufacture of the raw material, (b) in the process of refining, to improve recovery rate?

7. Please state in as much detail as possible the cost of manufacture of one maund of sugar in your refinery during the last seven years. What are the causes of variations?

8. How does your sugar compare in quality with ordinary factory sugar? Please state the prices obtained for different qualities of sugar during the last seven years.

9. What are the markets you supply and what are the freight rates?

10. What has been your output for molasses and what prices were obtained during the last seven years?

11. What has been the effect of (a) the Sugar Excise Duty imposed in 1934, (b) the excess imposed in 1937?

12. Under what conditions can refineries continue to operate in competition with sugar factories?

No. 5. Questionnaire for gur/jaggery merchants.

NOTE.—1. Reply to this questionnaire, if possible, with six spare copies, should reach the Secretary, Tariff Board, Ootacamund, before 25th June, 1937, at the latest.

2. Figures may kindly be given per standard maund (82½ lbs.).

3. It is suggested that a note may be made of any facts or figures which you will like to be considered as confidential. Such information will not be published. In no case will any indication be given in the Tariff Board Report of the source of information or the name of any individual except with permission.

1. What are the principal gur/jaggery marketing centres in which you deal?

2. What are the different kinds of gur/jaggery marketed by you?

3. What are the chief centres from which you obtain your supply and what is the quantity obtained from each during the last seven years? To what causes do you attribute variations?

4. Has there been any variation in the quality of gur/jaggery in recent years? If so, for what reasons?

5. Please state the prices of various kinds of gur/jaggery for the last seven years. To what causes do you attribute variations?

6. Is there any relation between the price of gur/jaggery and sugar?

7. How far is there competition between gur/jaggery and

(i) Indian factory sugar,

(ii) khandsari sugar?

Is sugar replacing gur/jaggery in your market?

8. How long will gur/jaggery keep in good condition? Is there any variation in the keeping qualities of different kinds of gur/jaggery?

Replies received from the Imperial Council of Agricultural Research, Simla.

(1) *Letter dated the 11th May, 1937, from the Tariff Board, to the Imperial Council of Agricultural Research, Simla.*

I am directed to invite a reference to the Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937, referring to the Tariff Board the question of the extent of protection required by the Indian Sugar Industry during the period from 31st March, 1938, to the 31st March, 1946. The Board have, in this connection, prepared a set of the following questionnaires:—

- (1) General Questionnaire,
- (2) Questionnaire for manufacturers of sugar by the open pan system and khandsars,
- (3) Questionnaire for Sugar Refineries,
- (4) Questionnaire for gur/jaggery merchants.

I am to forward herewith a copy of each of the above for information.

(2) *Letter dated the 21st June, 1937, from the Imperial Council of Agricultural Research, Simla.*

SUBJECT:—Sugar Questionnaire.

I am directed to forward herewith the following statements (6 copies each) relating to certain items of the Sugar Questionnaires:—

General Questionnaire:—

Question 46.—Statements giving monthly average price of gur in 8 centres in India.

Questions 91, 95, 96 (a) & (b) & 97.—A brief note prepared by the Director, Imperial Institute of Sugar Technology.

Question 102.—A statement showing the monthly average price for ready Java White Sugar (wholesale price per maund) and the monthly average prices of Cawnpore Special Sugar and Marhowrah Crystal No. 1, Factory Delivery Basis, Cawnpore.

Questionnaire for Local Governments:—

Question 1.—(i) Statement showing area under sugarcane in India by Provinces and States) since 1930-31.

(ii) A statement showing area under improved varieties of sugarcane in different provinces will follow shortly.

2. Information in respect of certain other questions will be sent to the Board as soon as it is ready.

Enclosure.

INFORMATION RELATING TO SOME OF THE QUESTIONS OF THE QUESTIONNAIRE ISSUED BY THE TARIFF BOARD.

91. Out of the several imported sugars only those can be selected for comparison with Indian Sugars in respect of quality, which have been made direct from cane and are not refined from raw sugar. Some of these plantation white sugars which were received in the Museum of this office for quality analysis are the following:—

- (1) Java White,
- (2) German Granulated Beet,
- (3) Mozambique Crystal,

and of these Java white is the best and quantitatively the most important.

About 15 per cent. only of the total Indian production of 1936-37 season may be said to be equal in quality to Java white, in respect of colour and

uniformity of grain though still generally lacking in brilliance. The rest of the Indian production is inferior to the Java white in colour, uniformity of grain, size and lustre.

95. The question of standardization was first taken up by the Sugar Mill-owners of the United Provinces, Bihar and Bengal at their conference held in Calcutta on 7th August, 1934. This conference appointed a special sub-committee which met at Cawnpore on the 26th August, 1934, under the chairmanship of Mr. R. C. Srivastava, Sugar Technologist to Imperial Council of Agricultural Research, for fixing standard qualities which were felt to be necessary for—

- (i) Developing sugar sales in distant markets without having to send samples from each factory.
- (ii) Securing greater uniformity amongst the various qualities of sugar manufactured by different factories.
- (iii) Raising the general standard of quality.
- (iv) Providing a basis of comparison in cases of disputes and also facilitating business in the case of forward contracts.

Standardization of sugars was moreover felt to be an important preliminary to the setting up of a central sales organization.

Two lines along which the standards could be drawn up were suggested,—

- (i) for the guidance of the buyers and sellers,
- (ii) for the guidance of the chemists in charge of manufacturing operations.

The former being approved, it was further agreed that colour and size of grain should form the basis of standardisation. With these as basis, specifications for standards were drawn up in 1935. These were revised in 1936. Specifications (No. I for 1935) and (No. II for 1936) are given below :—

Specification for 1935 (No. I).

I. S. S. No.	Grade.	Specification.
	<i>1. Crystal Range.</i>	
26	Extra special .	About equal to Best refined sugar in colour and size of grain.
25	Special A . . .	About equal to Java white in colour and size of grain.
24	Special AA . . .	About equal to Java white in colour but having fine grain.
23	Crystals . . .	Colour superior, grain, large.
22	Do. . . .	Ditto medium.
21	Do. . . .	Ditto small.
20	Do. . . .	Colour medium, grain, large.
19	Do. . . .	Ditto medium.
18	Do. . . .	Ditto small.
17	Do. . . .	Colour inferior, grain, large.
16	Do. . . .	Ditto medium.
15	Do. . . .	Ditto small.
14	Do. . . .	Classification based on colour only.
13	Do. . . .	Ditto
12	Do. . . .	Ditto
11	Do. . . .	Ditto
10	Do. . . .	Ditto
12/C	Crushed . . .	Colour, superior.
11/C	Do. . . .	Do. medium.
10/C	Do. . . .	Do. inferior.

Specification for 1936 (No. II).

FOR CRYSTAL SUGARS.

(i) Colour Standards.

I. S. S. No.	Specification.
26	} Classification based on colour only.
25	
24	
23	
22	
21	
20	
19	
18	
17	

(ii) Grain Standards.

I. S. S. No.	Size of grain in mm.
A	Between 1.574 & 2.540.
B	„ 1.056 & 1.574.
C	„ 0.635 & 1.056.
D	„ 0.421 & 0.635.
E	„ 0.317 & 0.421.

FOR CRUSHED SUGARS.

Colour Standards.

I. S. S. No.	Specification.
12	} Classification based on colour only.
11	
10	
9	

96. (a) No business was done on the basis of the Indian Sugar standards in 1935. Three factories and one or two merchants have, however, sold sugar on the basis of the standards in 1936-37.

Enquiries regarding the use of standards were made from sugar manufacturers and merchants and some of the reasons given by them for not adopting the Standards for selling purposes are as follows:—

- (i) Large number of mills are new and have not been able to standardize their products yet.
- (ii) Sugar Industry is still not sufficiently organized for it to be possible to market sugar on definite standards.
- (iii) Time is not yet ripe to submerge the identity of individual factories by selling on standards.
- (iv) Unless some form of collective marketing is organised, old established concerns cannot give up the benefit of selling on their well-known trade marks.
- (v) Dealers do not like to introduce a new item.
- (vi) Market not yet acquainted with the standards.

96. (b) The standards have, however, been used by many factories for internal control for grading their daily output.

97. No suggestions were received from firms of manufacturers or merchants for increasing the usefulness of the standards except for very minor changes in the existing specification of standards, some of which were accepted by the Advisory Committee of the Bureau of Sugar Standards and the Standards were revised accordingly.

Monthly Average price in Rupees per munda of Gur for Layaipur Market.

Months.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
January	Rs. A. P. ..	Rs. A. P. 5 4 0 to 5 7 6	Rs. A. P. 5 4 6 to 5 12 9	Rs. A. P. ..	Rs. A. P. ..	Rs. A. P. ..	Rs. A. P. 2 11 0	Rs. A. P. 4 7 9	Rs. A. P. 3 12 9	Rs. A. P. 3 3 0
February . . . . .	..	5 10 0 to 5 13 4	4 12 0 to 5 4 0	..	..	..	3 4 0	4 13 0	3 7 7	3 0 0
March . . . . .	..	5 15 0 to 6 1 0	4 13 0 to 5 8 0	3 5 4	..	..	3 0 7	4 9 3	3 12 9	2 15 0
April . . . . .	..	6 4 4 to 6 6 8	5 4 0 to 5 13 0	3 4 6	..	..	3 6 0	4 13 0	3 14 0	3 0 0
May	4 14 0	6 11 0 to 6 13 6	5 12 0 to 6 3 0	3 2 0	..	..	4 5 6	5 2 0	3 11 0	2 12 6
June	5 0 6	6 13 6 to 6 14 6	5 12 6 to 6 3 3	3 3 8	..	..	4 9 4	5 3 3	3 12 0	..
July	5 10 3	6 10 0 to 7 1 4	5 7 6 to 5 14 6	3 3 1	..	..	4 10 0	5 4 3	..	..
August . . . . .	..	8 0 0 to ..	5 8 0 to 6 8 6	3 8 0	..	..	4 11 6	5 6 4	3 10 0	..
September . . . . .	..	..	..	3 9 6	..	2 12 0	5 1 3	5 10 3	3 11 8	..
October . . . . .	..	..	..	3 10 0	..	2 11 0	4 11 0	5 8 9	4 5 6	..
November . . . . .	..	..	..	..	..	3 12 0	4 12 9	4 7 0	4 3 6	..
December . . . . .	..	..	..	:	..	2 15 0	4 3 8	3 15 8	3 10 0	..

Monthly average price in Rupees per maund of Gur for Meerut Market.

Months.	1933.	1934.	1935.	1936.	1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	..	3 2 0	4 1 9	3 4 3	2 13 2
February	..	3 5 6	4 6 3	3 1 8	2 8 3
March	..	3 10 3	4 5 2	3 8 0	2 6 6
April	..	4 4 9	4 8 0	3 8 0	2 8 4
May	..	4 15 6	4 9 6	3 4 9	2 6 9
June	..	4 15 7	4 6 0	3 3 0	..
July	..	5 3 3	4 7 0	3 7 0	..
August	..	5 11 6	4 10 8	3 6 2	..
September	3 4 0	6 0 9	5 1 0	3 7 6	..
October	3 7 0	5 3 3	4 10 6	3 13 4	..
November	3 6 0	4 13 3	3 10 3	3 2 4	..
December	2 13 4	3 7 6	3 5 6	2 14 2	..
Annual Average	3 3 6	4 9 3	4 5 7	3 6 4.8	..

Monthly average price in Rupees per maund of Gur for Siswa Bazar Market.

Months.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January . . .	3 0 0 to 3 10 0	3 9 0 to 4 6 0	..	2 14 0 to 3 7 0	3 0 0 to 3 10 0	2 10 0	2 7 0	3 2 6	2 11 0	1 10 6
February . . .	3 2 0 to 3 14 0	3 14 0 to 4 9 0	4 2 0 to 5 4 0	2 14 0 to 3 5 0	2 12 0 to 3 5 0	2 8 0	2 14 0	3 10 0	2 14 4	1 8 9
March . . .	3 4 0 to 4 3 0	4 1 0 to 4 12 0	4 6 0 to 5 7 0	2 15 0 to 3 11 0	2 6 0 to 3 1 0	2 8 0	3 6 0	3 10 6	2 11 4	1 5 7
April . . .	3 12 0 to 4 7 0	4 4 0 to 4 14 0	4 8 0 to 5 0 0	3 0 0 to 3 10 0	2 2 0 to 2 13 0	2 8 0	3 6 0	3 7 1	2 5 6	1 6 6
May . . .	3 14 0 to 4 6 0	..	4 11 0 to 5 8 0	3 0 0 to 3 12 0	1 4 0 to 2 7 0	2 12 0	..	..	..	1 5 4
Annual average . . .	3 12 0	4 4 6	4 14 5	3 4 0	2 10 5	2 9 2	3 0 3	3 7 6	2 10 6	..

Monthly average price in Rupees per maund of Gur for 1st Quality Prevailing in Calcutta Market.

Months.	1924.	1925.	1926.	1927.	1928.	1929.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	..	11 12 0	9 2 0	9 5 0	10 10 0	8 12 0	8 13 0	7 0 0	..	4 14 0	4 4 0	4 7 0	3 13 4	3 13 7
February	9 0 0	11 6 0	9 2 0	9 4 0	10 10 0	8 12 0	8 13 0	7 0 0	..	4 8 0	4 0 0	4 8 0	3 7 2	3 1 0
March	..	10 0 0	9 2 0	9 4 0	9 15 0	8 12 0	8 9 0	6 0 0	6 0 0	4 4 0	4 0 0	4 4 9	3 2 0	3 1 0
April	11 4 0	9 11 0	9 2 0	9 4 0	9 10 0	8 12 0	8 5 0	6 0 0	6 0 0	3 12 0	4 1 1	4 5 0	3 0 0	3 4 0
May	11 4 0	9 4 0	9 2 0	9 8 0	9 10 0	8 12 0	8 5 0	6 4 0	5 6 0	3 8 0	4 5 10	4 8 0	3 1 7	3 5 4
June	11 4 0	9 2 0	9 2 0	9 8 0	9 7 0	8 5 0	8 5 0	6 8 0	5 4 0	4 4 0	4 11 7	4 8 0	3 0 0	..
July	11 10 0	9 2 0	9 0 0	10 0 0	9 4 0	8 5 0	8 5 0	6 4 0	5 8 0	5 0 0	5 0 0	4 8 6	3 0 0	..
August	12 0 0	9 2 0	9 0 0	10 8 0	9 4 0	8 5 0	8 5 0	..	5 8 0	..	5 0 0	4 10 0	3 6 4	..
September	12 0 0	9 3 0	9 0 0	10 8 0	9 6 0	8 5 0	8 5 0	..	5 8 0	4 14 0	4 14 4	4 12 9	3 8 0	..
October	11 0 0	9 4 0	9 0 0	10 8 0	9 8 0	8 5 0	7 15 0	..	5 4 0	..	4 14 0	5 0 7	3 12 0	..
November	11 0 0	9 5 0	9 0 0	11 0 0	9 12 0	8 13 0	..	..	5 14 0	5 8 0	4 13 0	4 14 0	4 10 0	..
December	11 4 0	8 11 0	9 6 0	11 0 0	10 0 0	8 13 0	..	..	5 12 0	5 4 0	4 8 8	4 2 8	4 8 0	..
Total	11 10 0	11 15 14 0	10 9 2 0	11 9 0	11 7 0	10 2 15 0	8 4 0	0 45 0	0 55 0	0 40 12 0	5 4 8 6 5 4	9 3 33 2 5	..	..
Annual Average	11 2 7	9 10 6	9 1 6	9 15 5	9 12 0	8 9 3	8 6 4	6 6 10	5 8 0	4 8 5	4 8 8	4 8 9	3 5 0	..

Statement showing average prices of Gur selling in the Market of Dacca.

(Prices in Rupees per maund of 82½ lbs.)

Months.	1934.	1935.	1936.	1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	4 15 0	4 14 0	4 7 0	4 4 0
February	4 10 0	4 14 0	4 2 4	4 0 0
March	4 1 2	4 9 7	4 0 0	4 2 0
April	4 3 0	4 11 0	4 0 0	3 13 8
May	5 4 0	4 12 0	4 0 0	4 1 7
June	5 7 2	5 0 0	3 15 0	..
July	5 3 0	5 5 0	3 5 6	..
August	5 4 0	5 9 7	4 2 4	..
September	5 12 9	5 14 0	4 4 0	..
October	5 10 0	5 14 0	3 14 0	..
November	5 8 0	5 9 7	3 15 0	..
December	5 2 0	4 14 0	4 10 0	..
Average	5 1 4	5 3 4	4 0 11	..

सत्यमेव जयते

Monthly average Quotations of Gur for Madras Market.
(In Rupees per maund of 82½ lbs.)

Months.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
January	Rs. A. P. 9 3 0	Rs. A. P. 7 0 10	Rs. A. P. 5 3 3	Rs. A. P. 5 7 11	Rs. A. P. 4 10 0	Rs. A. P. 7 6 1	Rs. A. P. 4 13 10	Rs. A. P. 3 4 8
February	9 3 0	6 11 6	5 5 3	5 7 11	4 10 0	5 15 9	4 7 10	3 4 8
March	9 3 0	5 15 11	5 4 11	5 7 11	4 10 0	5 12 8	4 1 2	3 4 8
April	9 3 0	5 11 10	5 2 0	5 7 11	4 10 0	5 4 0	3 12 4	3 1 10
May	9 1 0	5 11 10	5 1 4	4 7 10	4 10 0	5 6 6	3 11 2	2 10 0
June	8 11 0	5 10 10	5 1 4	4 5 6	4 10 0	5 6 6	3 13 0	..
July	8 11 0	5 5 3	5 1 4	4 5 6	5 4 0	5 6 0	3 12 6	..
August	8 11 0	5 2 8	5 1 4	4 5 6	5 5 3	5 10 2	3 14 0	..
September	8 11 0	5 5 3	5 8 0	4 10 0	7 6 1	6 2 9	3 12 10	..
October	8 11 0	5 10 2	5 8 0	4 10 0	7 6 1	6 8 2	3 9 4	..
November	7 6 1	5 5 3	5 8 0	4 10 0	7 6 1	4 11 1	3 9 4	..
December	7 4 11	5 5 3	5 8 0	4 10 0	7 6 1	4 9 6	3 4 8	..

Monthly average prices for Gur for Ahmednagar Market.
(In Rupees per maund of 82½ lbs.)

Months.	1930.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	7 14 0	5 7 0	5 3 11	4 10 0	4 0 0	7 0 0	4 8 6	3 15 9
February	7 0 0	5 12 0	5 1 8	3 15 0	4 2 0	6 1 4	3 15 7	3 3 0
March	7 10 0	5 4 0	5 0 5	3 6 0	3 13 4	5 10 0	4 2 0	3 5 6
April	7 11 0	4 7 0	4 5 6	3 2 0	4 5 6	6 7 9	3 13 11	3 1 8
May	7 9 0	4 7 6	4 7 0	3 9 0	5 8 0	6 3 0	3 14 0	2 15 9
June	7 14 0	4 7 6	4 10 0	4 5 0	5 8 6	5 15 8	3 8 0	..
July	7 10 0	4 9 0	5 0 10	4 8 0	5 13 0	5 15 6	3 12 8	..
August	6 12 0	5 7 0	5 0 10	4 6 0	7 8 5	6 0 2	3 10 2	
September	6 14 0	5 5 0	5 6 1	4 3 0	7 3 0	5 10 11	3 11 0	
October	6 1 0	5 2 6	5 5 11	4 2 0	7 7 4	7 0 0	3 10 6	
November	6 13 0	5 12 0	5 4 10	4 4 0	7 0 4	5 10 5	4 1 0	
December	5 8 0	5 8 0	5 0 10	4 9 0	5 8 8	5 2 11	..	

Statement showing the monthly average price of ready Java white sugar per maund in principal Indian Ports and the monthly average price of Indian Factory made sugar on factory delivery basis at Cawnpore.

Month.		Calcutta average price per maund.	Rangoon average price per maund.	Bombay average price per maund.	Karachi average price per maund.	Madras average price per maund.	Cawnpore average price per maund of Cawnpore re Special sugar.
1930.		Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
April	.	9 2	9 14	9 7	9 3	9 9	10 4
May	.	9 0	9 11	9 8	9 1	9 5	10 2
June	.	8 15	9 8	9 11	9 7	9 1	10 0
July	.	8 11	9 1	9 7	9 0	8 13	10 0
August	.	8 13	8 15	9 6	8 12	8 13	10 0
September	.	8 13	8 14	9 7	9 6	8 12	10 1
October	.	8 8	8 11	8 13	8 12	8 8	10 0
November	.	8 4	8 6	8 11	8 5	8 6	9 13
December	.	8 4	8 5	8 11	8 4	8 6	8 13
1931.							
January	.	8 4	8 6	8 13	8 6	8 7	8 9
February	.	8 11	8 12	9 3	8 10	8 12	8 13
March	.	8 14	9 1	9 4	8 14	9 0	9 0
April	.	8 15	9 5	9 5	8 15	9 0	8 14
May	.	9 1	9 5	9 6	8 15	9 4	8 12
June	.	9 4	9 5	9 9	9 4	9 6	8 8
July	.	9 4	9 5	9 10	9 4	9 4	8 7
August	.	9 3	9 6	9 10	9 4	9 3	..
September	.	9 4	9 8	9 13	9 6	9 7	8 10
October	.	10 14	11 4	11 4	10 12	11 1	9 4
November	.	10 15	11 0	11 7	10 15	10 15	9 4
December	.	11 0	11 2	11 7	11 1	11 3	9 13
1932.							
January	.	10 15	11 6	11 8	11 0	11 4	9 14
February	.	10 15	11 1	11 8	11 0	11 1	10 1
March	.	10 12	10 13	11 3	10 11	10 9	9 9

Month.	Calcutta average price per maund.	Rangoon average price per maund.	Bombay average price per maund.	Karachi average price per maund.	Madras average price per maund.	Cawnpore average price per maund of Cawnpore special sugar.	Marhowrah Crystal No. 1 Monthly average price.
	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
1932.							
April	10 9	10 9	10 13	10 7	10 5	9 3	10 9
May	10 10	10 10	10 13	10 7	10 6	9 1	10 9
June	10 9	10 9	11 1	10 7	10 7	9 3	10 9
July	10 8	10 11	11 0	10 8	10 12	9 0	10 9
August	10 10	10 10	11 1	10 9	10 11	9 1	10 9
September	10 10	10 11	11 4	10 11	10 11	9 7	10 9
October	10 11	10 13	11 4	10 10	11 2	9 7	10 9
November	10 14	10 13	11 1	10 8	11 1	9 7	10 8
December	10 14	10 12	10 15	10 7	11 13	9 6	10 2
1933.							
January	10 8	10 11	10 13	10 4	10 11	9 2	9 11
February	10 6	10 7	10 13	10 3	10 8	9 0	9 6
March	10 6	10 6	10 13	10 6	10 9	8 11	9 3

Month.	Calcutta average price per maund.		Rangoon average price per maund.		Bombay average price per maund.		Karachi average price per maund.		Madras average price per maund.		Cawnpore Special sugar (factory delivery basis Cawnpore market) average price per maund.		Marhowrah Crystal No. 1 Monthly average price per maund (Factory delivery basis Cawnpore market.	
	Rs. a.		Rs. a.		Rs. a.		Rs. a.		Rs. a.		Rs. a. p.		Rs. a.	
1933.														
April	10 4		10 7		10 12		10 5		10 6		8 4 0		9 3	
May	10 4		10 6		10 13		10 6		10 8		8 6 0		9 5	
June	10 5		10 6		10 15		10 8		10 11		8 8 0		9 7	
July	10 7		10 8		10 13		10 8		10 8		8 7 0		9 10	
August	10 8		10 8		10 12		10 6		10 8		8 6 0		9 14	
September	10 8		10 9		10 12		10 6		10 7		8 6 0		9 13	
October	10 8		10 8		10 12		10 5		10 11		8 4 0		9 9	
November	10 9		10 5		10 14		10 3		10 5		8 3 0		9 0	
December	10 3		10 1		10 7		10 0		10 2		8 1 0		9 0	
1934.														
January	10 1		9 13		10 1		9 11		10 0		7 8 0		8 14	
February	10 5		9 14		10 5		9 13		10 0		7 12 0		9 0	
March	10 2		10 3		10 8		10 0		10 0		8 4 0		9 1	

Month.	Calcutta.	Rangoon.	Bombay.	Karachi.	Madras.	Cawnpore Special sugar (Factory delivery basis Cawnpore Market) Average price per maund.	Marhowrah Crystal No. 1 (Factory delivery basis Cawnpore market) Average price per maund.
1934.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
April	10 1	10 1	10 5	9 15	10 3	8 11	9 2
May	9 15	9 15	10 4	9 13	10 0	9 0	9 2
June	9 12	9 14	10 2	9 11	9 13	8 15	8 15
July	9 12	9 13	10 4	9 12	10 0	9 0	8 15
August	9 14	9 15	10 2	9 12	9 15	9 0	8 15
September	9 13	10 9	10 0	9 11	10 0	9 1	9 0
October	9 10	10 1	10 1	9 8	9 13	9 0	9 0
November	9 8	9 15	10 1	9 8	9 11	8 9	8 7
December	9 5	9 10	9 13	9 8	9 13	8 7	8 2
1935.							
January	9 11	9 11	9 13	9 9	10 0	8 7	8 6
February	9 9	9 13	10 0	9 12	10 0	8 14	8 8
March	9 9	9 10	9 11	9 10	10 0	8 15	8 8
April	9 12	9 13	9 14	9 9	9 5*	9 0	8 13
May	9 15	10 0	10 2	9 12	9 6*	9 0	8 15
June	9 13	10 0	10 3	9 13	9 7*	8 14	8 14
July	9 11	9 13	10 0	9 10	9 6*	8 12	8 12
August	9 7	9 13	9 15	9 8	9 6*	8 9	8 10
September	9 7	9 14	10 2	9 14	10 0†	8 13	9 0
October	10 10	10 11	10 7	10 3	10 11†	9 2	9 4
November	10 6	10 5	10 1	10 0	9 15†	9 3	9 1
December	9 13	9 15	10 0	9 11	9 12†	9 0	8 11
1936.							
January	9 12	9 13	10 0	9 11	9 13†	9 0	8 11
February	9 13	9 14	9 14	9 14	9 11†	8 12	8 9
March	9 13	9 15	9 14	9 11	9 12†	8 10	8 10

* Prices of Egyptian Sugar (April to August, 1935).

† Prices of British Refined, (September 1935).

† Prices of Java Sugar (October, 1935 to March, 1936).

Month.	Calcutta.	Rangoon.	Bombay.	Karachi.	Madras.	Cawnpore Special sugar (Factory delivery basis, Cawnpore market) Average price per maund.	Marhowrah crystal No 1 (Factory basis, Cawnpore market) Average price per maund.
1936.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
April	9 13 0	10 4 4	9 13 10	9 11 0	9 11 3	8 8 4	8 9 8
May	9 13 0	10 4 4	9 13 10	9 10 8	9 11 3	8 8 10	8 8 7
June	9 13 0	9 15 2	9 13 9	9 9 0	9 11 3	8 8 0	8 8 8
July	9 13 0	9 12 10	9 12 8	9 9 0	9 11 3	8 0 0	8 7 6
August	9 13 0	9 11 5	9 12 8	9 9 0	9 11 3	7 7 0	8 6 9
September	9 13 0	9 10 7	9 12 0	9 8 8	9 11 3	7 3 0	8 7 0
October	9 11 0	9 10 10	9 12 0	9 8 3	9 9 9	7 1 0	8 6 2
November	9 9 9	9 11 7	9 11 0	9 8 3	9 10 3	7 1 6	8 8 0
December	9 6 9	9 15 9	9 7 0	9 8 3	9 9 1	6 14 8	7 9 6
1937.							
January	9 6 0	10 0 6	9 6 0	9 9 6	9 8 10	6 7 7	7 0 0
February	9 6 0	9 12 8	9 6 0	9 11 5	9 7 6	6 8 0	6 9 5
March	9 6 0	9 14 6	9 6 0	9 14 0	9 8 10	6 8 0	6 7 8

STATEMENT No.1.

Area under Sugarcane (in thousand acres).

Provinces and States.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
United Provinces (a)	1,504	1,593	1,793	1,734	1,840	2,249	2,519
Punjab	426	475	558	466	462	474*	551
Bihar and Orissa	284	282	302	418	445	447	460
Bengal	199	233	233	257	276	325	355
Madras	112	117	125	120	122	119	122
Bombay (a)	93	99	105	103	114	122	126
North-West Frontier Province	47	44	53	49	43	59	72
Assam	33	31	32	35	35	37	38
Central Provinces and Berar	21	22	28	29	29	30	30
Orissa . . . . .	..	..	..	..	..	31	30
Delhi	5	3	4	3	8	3	5
Sind . . . . .	..	..	..	..	..	5	4
Mysore	38	36	42	42	46	51	52
Hyderabad	34	35	40	46	51	59	58
Baroda	1	2	2	2	2	6	6
Bhopal (Central India) . . . . .	..	..	4	4	4	3	3
Other tracts	108	105	104	114	125	134	142
Total	2,905	3,077	3,425	3,422	3,602	4,154	4,573

(a) Including Indian States.

* Including Orissa.

(3) Letter dated the 23rd June, 1937, from the Secretary, Imperial Council of Agricultural Research, Simla.

SUBJECT:—*Sugar Questionnaire.*

In continuation of this Department letter, dated the 21st June, 1937, I am directed to forward herewith:—

- (i) A statement showing the amounts allotted to provinces from the Sugar Excise Fund and the approved schemes financed out of these allotments (*vide* question 10 of the questionnaire for Local Governments).
- (ii) A note on Sugarcane Research in India during the years 1929-30 to 1936-37, by Dr. W. Burns, Officiating Agricultural Expert, Imperial Council of Agricultural Research (*vide* Question 11 *ibid*).

2. As regards question 49 *ibid*, I am to add that the position of the Jam making and fruit canning industry in the North-West Frontier Province and the Punjab was recently brought to the notice of the Government of India. In order that the case may be examined thoroughly by the Tariff Board, the Directors of Agriculture of these and other provinces have been advised to send you direct the following information in respect of their provinces.—

- (1) Number of farms or concerns in each province for manufacturing jams and canned fruits.
- (2) Present output of jams or canned fruits of each farm or concern.
- (3) The varieties of jams manufactured or fruit canned by each concern.
- (4) The available supply of fruit of the kinds and varieties suitable for jam making or for canning for commercial purposes.
- (5) Present cost of production in respect of each variety in each farm or concern, with the percentage of sugar used in each variety.
- (6) Details giving the cost of sugar per lb. and cost of other ingredients as well as containers in the case of each variety.
- (7) The respective sale price of jams or canned fruits and the imported products with which they compete.

3. Further information on other items of the questionnaire will be forwarded when ready.

Enclosure.

Province.	Allotment 1934-35 and 1935-36.	Allotment 1936-37.	Approved Schemes.	Funds allotted so far.
United Provinces	Rs. 5,40,000	Rs. 4,76,000	1. Administration of the Sugarcane Act, 1934 and the Rules thereunder. 2. Co-operative marketing of sugarcane. 3. Renewal of seed in areas affected by frost. 4. Development of cane cultivation in Tubewell area.	Rs. 1,15,000 3,54,118 3,06,400 1,43,782

Province.	Allotment 1934-35 and 1935-36.	Allotment 1936-37.	Approved Schemes.	Funds allotted so far.
	Rs.	Rs.		Rs.
Bihar . . .	2,90,000	2,46,500	1. Working of the Sugarcane Act, 1934 and the Rules thereunder.	58,985
			2. Improvement of sugarcane cultivation.	80,000
			3. Organisation and operation of Cane-growers' Co-operative Societies.	80,062
			4. Expansion of the Sugarcane Improvement Scheme.	..
Punjab . . .	30,000	25,500	1. Establishment of Canegrowers' Co-operative Unions for improvement of cane-cultivation and co-operative marketing.	31,740
Bombay . . .	30,000	25,500	1. Organisation of Co-operative Societies for the supply of sugarcane to factories.	13,200 (Recurring).
			2. Grant to these societies of subsidies for the entertainment of expert staff and purchase of improved types of seed.	10,000 (Non-recurring).
			3. Financing a portion of the Padegaon Research Scheme.	49,830 (Spread over 4 years).
Orissa . . .	5,000	5,000	Improving the standard and quality of cane by introducing improved methods of cultivation.	1,00,000
Madras . . .	57,500	31,500	No suitable schemes have yet been formulated by the Provincial Governments.	
Bengal . . .	20,000	25,500		

A NOTE ON SUGARCANE RESEARCH IN INDIA DURING THE YEARS 1929-30 TO 1936-37, BY W. BURNS, D.Sc., OFFG. AGRICULTURAL EXPERT, IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH.

Introduction.

It is no easy matter to survey briefly and yet completely the large amount of research work on sugarcane that has been carried out in the period under review. There was already a substantial foundation in the work done by the Central and Provincial Departments of Agriculture since about 1907. The recent intensification and spread of scientific investigation on sugarcane problems has been largely due to the stimulus and subsidies of the Imperial Council of Agricultural Research. Immediately on its constitution, this Council took up the general question of the improvement of sugarcane growing and set up a special sugar committee for this purpose. There are now proposals for giving this committee much greater responsibility and a Rs. 5 lakh budget to itself for the continuation of this research and for other purposes. A chain of provincial sugarcane experiment stations subsidised by the Imperial Council of Agricultural Research now exists, these stations being situated at Jorhat (Assam), Dacca (Bengal), Mushari (North Bihar), Shahjahanpur and Muzaffarnagar (United Provinces), Jullundur and Lyallpur (Punjab), Padegaon (Bombay), Anakapalli and Gudiyattam (Madras), and Mysore. There is also the Sugarcane-Breeding Station of the Imperial Agricultural Research Institute at Coimbatore and its branch at Karnal.

It will be convenient to divide the subject-matter into the following heads under which the all-India results of the last seven years reviewed:—

- (1) Production and testing of new varieties.
- (2) Extension of the season of crushing.
- (3) Increase of yields.
- (4) Manuring problems.
- (5) Irrigation problems.
- (6) Cultivation problems.
- (7) Ratooning.
- (8) Soil investigations.
- (9) Diseases (other than insect pests)
- (10) Insect pests.
- (11) Plant physiology, and
- (12) Molasses.

(1) Production of new varieties.

There have been some marked advances in technique, of which perhaps the most striking is the control of the flowering time of sugarcane varieties. In order to make crosses, it is essential that the parent varieties shall flower at the same time and, since this often does not occur naturally, various measures had to be invented to ensure simultaneous flowering. Such measures are the planting of canes at different seasons and under different soil conditions, the subjecting of canes to only six hours day light and the repeated removal of the top of the sugarcane. By means like these, a period of over three weeks has been bridged and crossing ensured.

India is rich in various kinds of wild sugarcane and these forms are being collected at Coimbatore for study and one or two of them have been utilised as parents in complex crosses in order to bring in toughness of constitution. This has been successfully accomplished. Some of the complex crosses involved at least three different species of *Saccharum* and in some of these Co. 313 has been found a useful parent for introducing

both good habit and satisfactory juice quality. An advance of great interest both scientifically and practically was the hybridisation of sugarcane and sorghum (*juar*). This yielded a line of hybrids which were expected to be very early as, at first, under Coimbatore conditions they ripened in about six months. Their later performance in other stations has, however, not been quite so satisfactory from the point of view of earliness but one or two of them have given a good quality juice and it is certain that some of them will find a suitable niche in the agriculture of certain areas in India. Quite recently the Imperial Sugarcane Expert has made another astonishing cross, *viz.*, between sugarcane and bamboo, of which cross the possibilities have still to be investigated. The production of new varieties from Coimbatore has been admirably seconded by the further testing and to some extent breeding of these at Karnal and at Shahjahanpur. Varieties produced at Coimbatore are always labelled Co. with a number following and those produced at Karnal and Shahjahanpur are labelled Co. K, and Co. S respectively with numbers following. Successful breeding of thick canes is also being carried out on the Mysore Farms, and this Department has also been using X-rays as a means to induce the production of new varieties.

The result of the widespread of the varieties produced at the Indian cane breeding stations and, in a few places, of those introduced from Java or from Mauritius, has meant the practical elimination of the old indigenous canes over very large areas. The latest actual figure for the acreage known to be under improved canes throughout India is well over three million acres out of a total acreage of over four million acres, *i.e.*, about 75 per cent. In many localities, however, the acreage under improved canes is somewhere in the neighbourhood of 90 per cent. of the total sugarcane area.

Just as the old varieties have in many places been eliminated, so also the continuous and increasingly severe testing of the improved varieties has resulted in the elimination of the less satisfactory of these, *e.g.*, in Assam in 1932-33 varieties Co. 312 and Co. 214 was discarded for that area. In the same year at the Imperial Agricultural Research Institute Co. 300, Co. 301 and Co. 302 were discontinued as they failed to compete successfully with early and mid-season standard varieties and even P.O.J. 2878 was finally discarded on account of stunted growth and unsuitable agricultural habit when grown at Pusa. In Bihar, Co. 205 was discarded by many factories because it was a difficult cane to mill. These facts bring out one rather important consideration, *viz.*, that what is good for one part of India may not necessarily be good for another. For example Co. 360, which is so good in the Bombay Deccan that it is regarded as one of the best for all soils and purposes has been discarded on the Dacca station Co. 290 also popular in the Deccan and elsewhere has been given a back seat in favour of Co. 300 at Muzaffarnagar. Co. 313, a very good cane in many centres, has been rejected at the Irwin Canal Farm, Mysore. This holds not only with regard to sugarcane varieties but also with regard to manuring, cultivation, ratooning, etc. While, therefore, certain very broad generalisations are possible concerning the growth of sugarcane in India, it is intense local experimentation that must be relied on for the development of local agriculture.

(2) *Extension of the season of crushing.*

From the mill point of view this is a matter of the first importance. At Pusa, from 1930-31 to 1932-33 experiments were conducted to this end. It was found that Co. 299 was as early as Co. 214 (a cane already known to be early and far superior to it in tonnage) while Co. 331 was a late cane suitable for crushing in April and May, giving a high tonnage and standing longer in the field than any other variety grown on an extensive scale in that tract. At the Mushari research station, near Muzaffarpur in Bihar, the primary object of the work is to find, by selection or breeding,

cane suitable to the province and to meet the requirements of the white sugar industry in early, mid-season and late canes. Mention has been made in the previous section of the sugarcane-sorghum hybrids and some of these are expected to be the earliest to mature during the ripening period of cane in some of the areas of sub-tropical India. With the introduction into the general agricultural system of the three varieties Co. 299, Co. 313, Co. 331 in North Bihar, the supplies of desirable raw material should be ensured from about the middle of November to the beginning of May. In the Punjab, Co. 221 and Co. 313 have been proved early and satisfactory. Among the mid-season varieties Co. 213, the standard variety did better than the others in yield. Co. 347 did equally well and in addition ripened earlier. Among the late maturing varieties Co. 300 was the best and gave a high outturn, Co. 312 stood second. In Madras, experiments show that by a suitable adjustment of varieties, crushing can be started as early as the 15th November and continued until the end of May. In Bombay, at the Padegaon research station all the promising varieties have been classified as early, medium and late and they are being fitted into a scheme of planting to cover as long a period as possible.

(3) Increase of yields.

Increase of actual cane tonnage is also of the first importance and, if it can be attained without proportionately increased expenditure, then we have advanced towards greater profit to both the cultivator and the factory owner, always assuming, of course, that the composition of the juice remains equally satisfactory. Tonnage is determined by two main factors:—

- (1) the intrinsic productive power of the cane (some canes are inherently higher yielders than others given equal conditions), and
- (2) the external conditions including soil, climate, manuring, irrigation and cultivation.

Fluctuations of yield are inevitable under the best conditions. The Imperial Agriculturist commenting in 1934-35 on a five-year comparison of yields of Co. 210 and Co. 213 at Pusa, said,

“The tonnage yield of these varieties depends much upon the monsoon variation and local soil conditions”.

The actual yields in 1933-34 and 1934-35 of these two varieties at Pusa were:

		(In tons per acre).	
		Co. 210.	Co. 213.
1933-34	“सकपेन पुणे”	28.9	27.2
1934-35		26.7	25.8

In 1933-34 the difference was ‘significant’.

In 1934-35 it was not.

The Imperial Agriculturist also remarked in 1933-34—

“Co. 213 and Co. 210 are the standard canes for the tract and their selection for different areas must always be a question of local conditions, as it is impossible on the face of the above figures (four years figures) to give any definite ruling as to the tonnage superiority of one over the other”.

While the yield of great tracts of the main sugarcane producing provinces is still far from satisfactory when compared with the yields got, say, in Java, it is a definitely proved fact from the work of the Indian research stations and also from the experience of those factories which grow their own cane that high yields are possible. The following few sample figures indicate the range of possibilities:—

In Burma in 1932-33, P.O.J. 2878 gave 44.6 tons per acre on a five-acre block while in Assam in the same year the average outturn per acre of the experimental crop of all varieties was 28.26 tons of stripped cane for plant cane and 26.76 tons for ratoon. At Gudiyattam in 1935-36, Co. 213

gave 58.9 tons cane per acre. At Padegaon in 1935-36, Co. 419 gave 56 tons per acre. Experiments conducted with Co. 360, P.O.J. 2878 at three sugar factories, one Government farm and three cultivators' fields in different parts of Deccan-Canal area in 1935-36 gave the following results:—

Name of place.	Yield per acre in tons.	
	Co. 360.	P. O. J. 2878.
Ravalgaon Sugar Factory	50.5	41.4
Kalamb Sugar Factory	61.5	48.0
Belvandi Sugar Factory	44.48	43.47
Kopergaon Farm	38.00	36.26
Pravara Canals	39.00	37.00
Godavari Canals	48.00	49.51
Nira Left Bank Canal	43.7	44.6

In 1935-36 at Padegaon, Co. 419 gave 62.59 tons per acre. At Dacca in 1935-36, Co. 432 yielded 31.9 tons and D.S. 31 gave 36.1 tons. At Jorhat Co. 419 yielded 53.98 tons cane and 5.63 tons per acre sucrose.

In 1935-36 in Mysore in separate experiments—

	Tons per acre.
H.M. 320	32.59
	36.86
H.M. 606	27.80
	51.58
	37.69
and	
H.M. 607	42.81
	50.43

gave the above yields.

(4) Manuring problems.

This is perhaps the most difficult section of sugarcane research work to summarise satisfactorily. At different research stations experiments have been planned in different ways, using different manures, different combinations of manure and different amounts of manure and the correlation of the results of all these varying experiments presents rather a problem. It is, of course, a fact that different soils, climates, cane varieties and systems of agriculture require different types of manuring. Hence variation there must be. It is also worth keeping in mind that the technique of field experiments has in recent years been greatly improved. In fact, a whole branch of applied mathematics has grown round it, so that we are usually in a position to say that *in particular circumstances* a result obtained is significant or otherwise. The term "significant" in this sense usually means that the chances are 20 to 1 against the result being accidental or, put the other way, betting is 10:1 that the results got are really due to the treatment applied. A few selected figures will perhaps be the best way of indicating some of the results of recent investigations.

(a) *Nitrogen requirements.*—For the vigorous development of vegetative parts such as stems and leaves of any plant it has long been known that a large supply of nitrogen is essential. The vigorous vegetative growths that can be seen wherever there have been dumps or manure in fields or where washings from byres or stables have been permitted to soak into fields are clear indications of this fact. It was early recognised that manuring with additional nitrogen would help high tonnage and, even

before the Imperial Council of Agricultural Research interested itself in this problem, a fair amount of work had been done by the provincial departments on manuring and particularly on the use of sulphate of ammonia in certain tracts, *e.g.*, at the Manjri sugarcane experiment station in the Bombay Presidency. Manurial experiments have dealt with the *amount* of nitrogen to be applied and the *nature* of the nitrogenous manure to be applied. We may say briefly that sugarcane is very greedy of nitrogen and the experiments at Padegaon in the Bombay Presidency indicate that there at least the top limit of nitrogen manuring has not been reached even with an application of 300 lbs. nitrogen per acre and 600 lbs. nitrogen per acre is now being used. At that station, on the other hand, it was shown that 50 lbs. of nitrogen per acre fell short of requirements of the sugarcane crop. At the same station, largely based on the previous experiments at Manjri, the optimum dose has been considered as 150 lbs. of nitrogen per acre. In 1934-35 the relative efficiency of the 50, 150 and 300 lbs. nitrogen treatment from the standpoint of yield was worked out to be 0.8, 1, 1.5. An interesting attempt to force up yields resulted from a competition organised by the Maharashtra Chamber of Commerce, Bombay, in the 1935-36 season. Various of the Deccan factory estates competed in this competition and yields of 80 to 100 tons per acre were obtained without any reduction of sucrose. This was an indication of what heavy balanced manuring and suitable watering can do. Two questions immediately arise in connection with this experiment, *viz.*, (1) what will be the effect on the soil, and (2) is it economically sound, *i.e.*, does the increased yield pay for the increased manure? The economic point of view has been kept in mind in certain of the manurial experiments in other stations. We find it reported for example, in Bihar in 1934-35 that 100 lbs. of nitrogen per acre appear to be the best dose for sugarcane under conditions obtaining in Patna, while anything more than 60 lbs. nitrogen per acre was reported to be definitely uneconomical on heavy soils in South Bihar. At Chota Nagpur, 80 lbs. nitrogen per acre gave heavy yields on the departmental farms. At Shahjahanpur, in the United Provinces, in 1935-36 also the limit of profitable application of nitrogen was reached at 100 lbs. nitrogen per acre.

In 1934-35 and 1935-36 at the Anakapalli station in Madras with 50 lbs. nitrogen regarded as the normal treatment and its yield taken as equivalent to 100, the yields of jaggery from treatments of 25, 50 and 100 lbs. nitrogen per acre were as shown in the following table:—

		25N.	50N.	75N.	100N.
Co. 213—					
1934-35	. . .	89.89	100	126.20	134.60
1935-36	. . .	81.56	100	89.71	96.45
			control.		
Co. 281—					
1934-35	. . .	80.50	100	111.10	119.40
1935-36	. . .	85.25	100	83.99	96.10
			control.		
Co. 356—					
1934-35	. . .	117.00	100	133.90	138.60
1935-36	. . .	120.90	100	122.00	130.30
			control.		
P.O.J. 2878—					
1934-35	. . .	91.03	100	115.70	118.10
1935-36	. . .	93.87	100	94.45	83.90
			control.		

These experiments bring out one point which is rather worth noticing, *viz.*, the different response of different varieties to manuring. This pheno-

mona is known as *inter-action* of manure and variety, and arrangements are made in the mathematical treatment of results to estimate such inter-action not only between variety and manure but between any factors which may be involved in a complex experiment.

In Burma in 1934-35, 60 lbs. of nitrogen in the form of sulphate of ammonia per acre gave a crop increase of 14.5 tons compared with 34.7 tons control per acre, equivalent to a 42 per cent. increase. An experiment was carried out in which sulphate of ammonia was applied at approximately about 5 and 6 cwts. per acre. This was not statistically conclusive but seemed to indicate that 3 cwts. per acre is a satisfactory maximum. This works out at roughly 67 lbs. nitrogen per acre and is in fair agreement with the previously mentioned experiment. In 1932-33 in a fertiliser experiment in Burma it was proved that the addition of 15, 30, 45 and 60 lbs. of nitrogen as sulphate of ammonia per acre gave increased yields of 11 per cent., 20 per cent. and 42 per cent. respectively.

At Palur in the Madras Presidency, experiments for five years ending 1932-33 indicated that the local standard variety 'Fiji B' responded most to heavy manuring of 200 lbs. nitrogen per acre in the shape of oil cake and sulphate of ammonia in the proportion of 3 to 2.

To determine an economic substitute for farm yard manure and also the optimum dose of nitrogen for cane, the various combinations of toria cake and ammonium sulphate applied separately at 35 lbs., 70 lbs., and 105 lbs. N. per acre with 70 lbs. N. in the farm-yard manure were tried amongst themselves and against 140 lbs. N. in farm-yard manure alone, taken as standard. The yields as well as economic returns are in favour of toria cake doses compared to their equivalent doses applied in ammonium sulphate. The standard manure, *viz.*, 140 lbs. N. per acre in farm yard manure, was the poorest of the lot.

(b) Turning now to the question of the form in which nitrogenous manures should be applied, there is a general consensus of experimental results to show that part at least of the nitrogen should be given in the form of an organic manure. Such organic manures are farm-yard manure, oil-cakes, green manure or composts. Green manure has received a fair amount of attention and is in fact a normal part of sugarcane rotation in certain areas, *e.g.*, the Bombay-Deccan, largely as the result of the early work of the Manjri Sugarcane Station and the departmental propaganda thereon.

At Padegaon, in 1935-36, to test the best combination of different quantities of farm manure 10,000, 20,000 and 30,000 lbs. in combination with 50,100 and 150 lbs. nitrogen top-dressing in each case were applied to varieties Pundia and P.O.J. 2878. Results indicated that, from the economic point of view, it is not safe to reduce the nitrogenous top-dressing below 150 lbs. and the organic manure below 20,000 lbs. The different quantities in nitrogenous top-dressing and organic manure did not cause any marked variation in sucrose in the cane. At the same station, the artificial fertilisers—sulphate of ammonia, nitrate of soda, nitrate of potash, calcium cyanamide in combination with an equal amount of cake were tested, the total quantity of nitrogen being 150 lbs. as top-dressing in each case. The trend of the result is the same as in 1934-35, *i.e.*, there was no marked difference between the different artificials.

At Shahjahanpur, in 1934-35, it is reported that green manuring by sann hemp increased the yield by over 40 per cent. and could be profitably augmented by cow-dung or ammonium sulphate but not by castor cake. Castor cake alone at 120 lbs. nitrogen to the acre gave better results than the equivalent mixture of castor cake and ammonium sulphate or farm-yard manure and ammonium sulphate, all being better than farm-yard manure alone. Where green manure cannot be given, castor cake alone was indicated for that year if cheap and readily available or, alternatively, cow-dung supplemented by a later dose of ammonium sulphate.

Further manurial trials in 1934-35 at Palur indicated that sodium nitrate is not as good as a mixture of ammonium sulphate and oil cakes. At Padegaon in 1935-36 a useful compost was made from cane trash to adopting long surface heaps and using cow-dung and gurnal ash as starter and compactor. The heaps were watered and received turnings. The compost works out at Rs. 1-5 per ton with an analysis of nitrogen 0.63 per cent., P_2O_5 0.65 per cent., K_2O 3.35 per cent.

At Shahjahanpur in 1935-36 a comparison of organic *versus* inorganic manure gave yields for organic manure 90.2 maunds and for inorganic 75.7 maunds per acre. Experiments at Jorhat in Assam in 1935-36 indicated that it was not sufficient when ratooning to rely on the residual effect of manuring of plant cane but that ratoons themselves had to be manured. Other experiments indicated that a mixture of cow-dung and oil-cake was better than either applied alone. At Muzaffarnagar in 1935-36, 60, 120 and 180 lbs. nitrogen were compared in three varieties—Co. 244, Co. 300 and Co. 212 while the yield here went up as a rule with the increased nitrogen. The response was not very marked beyond a 60 lbs. nitrogen per acre length. The highest yield got in this experiment was for Co. 213, with 180 lbs. nitrogen which gave 36.7 tons per acre. Other experiments at this station indicate the advisability of utilising organic along with inorganic manures.

(c) *Manuring with other elements.*—As regards manuring with elements other than nitrogen it was found at Padegaon in 1935-36 that the addition of 100 lbs. P_2O_5 at planting time to Pundia cane in addition to the usual standard dose of nitrogen top-dressing with sann hemp before cane gave results which increased the tonnage by 19 per cent. with high *gul* to cane recovery.

In the Punjab results obtained from the trial of nitrogenous (100 lbs. N.), Phosphatic (75 lbs. P_2O_5), Potassic (100, 150 and 200 lbs. K_2O) and complete artificial (100 lbs. N., 75 lbs. P_2O_5 , 150 lbs. K_2O) manures with 8 tons of farm-yard manure as basic dose in all cases have indicated that the Punjab soils do not respond to potassic and phosphatic manures even when the former was applied at 200 lbs. K_2O per acre. Yields were statistically in favour of nitrogenous and complete manures and the increase in the latter case is attributed mainly to the presence of nitrogen as one of the constituents.

At Shahjahanpur it is shown that there is no effect of P_2O_5 or K on yield.

There is no effect of either P_2O_5 or K on the quality where N remains at 100 lbs. or below. P_2O_5 and K improve the quality of juice at 200 lbs. of N which clearly shows the effect of P_2O_5 and K only at higher doses of N.

(5) *Irrigation Problems.*

Just as with manure, so with irrigation, there is great variation in practice due to variations in soils, rainfall and in the price of irrigation water. Accurate irrigation experiments are more difficult to lay out than manurial experiments as there must be an accurate water-measuring device for each plot. There are, of course, irrigation experiments in which the water has been much more roughly measured or estimated and these have a certain value as indications, but all irrigation work really requires accurate measuring apparatus. Irrigation experiments are also very markedly affected by the nature of the season. No matter how much water one may apply at the roots of a sugarcane plant, its above-ground growth is very much affected by the surrounding atmosphere and a mere increase in soil moisture by artificial means does not entirely compensate for the lack of atmospheric humidity in the case of a failure of normal rains. These seasonal effects are, in fact, the reason why all field experiments must be repeated over a series of years, three years being the very minimum for such a series. The Imperial Council's schemes are generally for five-year periods in the first instance and within these five years normally four seasons' results can be got. Irrigation experiments are, as a rule, combined either with manurial experiments or with varietal experiments or with both.

At Anakapalle in 1935-36 comparisons were made between blocks receiving normal irrigations (7 irrigations), "winter irrigations" (3 irrigations) and "hot weather irrigations" (2 irrigations) and "no irrigation". Both "winter irrigation" and "normal irrigation" were better than "hot weather irrigation" and "no irrigation". There was very little difference between the last two. In 1934-35 "normal irrigation" was better than all the other three, giving in general yields of 19 per cent., 11 per cent., 12 per cent. higher yields over "no irrigation", "cold weather irrigation" and "hot weather irrigation" respectively. At the same station from 1932-33 to 1935-36 it has been proved that it is possible to grow sugarcane with only one irrigation at the time of planting either in February, March or April. Another experiment for determining the water requirements of cane was prepared by the Chief Engineer (Irrigation). In 1935-36, Co. 313 was grown for this purpose. The crop stood in the field over 10 months and received five irrigations receiving 16.19" water in this way, the rainfall during the period was 27.99". The crop gave an acre yield of 34.98 tons of cane. A similar experiment was made with one irrigation at planting time. Co. 213 under these conditions gave a yield of 40.30 tons per acre, Co. 313 44.61 and Co. 419 47.73 tons per acre. In that year the rainfall was 42.55" for the 12 months. At Anakapalli rainfall figures showed that about 6" of rain was received in the hot weather—February to May, 20" during the south-west monsoon and 15" during the north-east monsoon—total 41". This is considered sufficient to grow a sugarcane crop provided it is planted either with the help of the hot weather rains or the first south-west monsoon showers.

At Padegaon in 1935-36 experiments were made with 70", 95", 120" and 130" of water applied to varieties—Pundia and P.O.J. 2878. The water was distributed throughout the 12 months with a ten-day turn. The manuring dose was 150 lbs. nitrogenous top-dressing in all cases. 95 acre inches turned out to be the best, giving increased tonnages over 70, 120 and 130 acre inches.

At Shahjahanpur in 1935-36 an experiment was made with 80,000 gallons per acre per irrigation giving 3, 4, 5 and 6 times each combined with 60, 100 and 200 lbs. of nitrogen per acre. In every case the yield increased according to the number of times water was given, the results being very striking in this respect, *e.g.*, when the water was given three times the yield with 100 lbs. nitrogen was 691.82 maunds, while when the water was given six times, the yield of cane per acre was 893.92 maunds per acre of cane. Another experiment at the same station investigated the effect of giving 240,000, 360,000 and 540,000 gallons per acre per year with two levels of nitrogen, *viz.*, no nitrogen and 100 lbs. nitrogen per acre. Along with this was combined three sowing dates—February 1st, March 8th and April 12th. In the case of the series receiving nitrogen, the maximum weight was produced with the earliest sown plant when most water was given. There was a decreasing efficiency of both nitrogen and water with delay in the time of planting.

At Muzaffarnagar with irrigation experiments from a tube-well five irrigations gave the best results.

In the Punjab, as regards sucrose formation in a heavily manured crop under different number of waterings it was found that in Co. 285 there was an increase of 1.5 and 2.75 maunds of sucrose per 100 maunds of cane in favour of waterings applied after 7 days as compared to 14 and 21 days, respectively. Similar results were obtained with Co. 313.

(6) *Cultivation methods.*

The term cultivation methods as here used includes a variety of miscellaneous procedures such as planting times, planting in a furrow or on the flat and spacing.

In Burma in 1930-31 an examination of the local pit method of planting and the cheaper method of laying the setts in a furrow showed

a marked increase in the output of cane in favour of the pit method. In Bihar and Orissa in 1934-35, preliminary work on spacing showed 2½' spacing between rows in the case of Co. 299 to be the optimum distance and one that resulted in a significantly higher yield. On the other hand at Pusa, a careful experiment repeated in 1933-34, 1934-35, 1935-36, showed no difference in yield between 3ft. and 2½ft. spacing. In fact the 2½' spacing was really disadvantageous as it required more setts per acre. In Assam in the same year sugarcane planting in October just after the close of the rains was found to give higher yields than those planted in the normal season, the figures of stripped cane per acre being as follows:—

October planting—70,362 lbs.

June planting—42,498 lbs.

March planting—36,504 lbs.

In Madras at Palur in 1934-35 monthly trials showed January-April to be the best season for planting. At Anakapalle in 1934-35 enhanced yields were not obtained with increased seed rates and it was considered uneconomical to use seed-rates higher than 12,000 setts per acre for a variety such as Co. 213. Results from spacing trials were not significant in all the varieties but a slightly wider spacing seemed to be advantageous. In 1935-36 the general trend of the experiments was that yields were in general greater under a closer spacing within a variety but the differences were not significant. At Muzaffarnagar in 1935-36 a spacing experiment indicated that 2½ to 3' spacing with 12,000 setts per acre was the best. At Jorhat it appeared that it would be desirable to give 3' spacing to a thin variety like Co. 210 and 4' spacing to a thick cane like P.O.J. 2878 but it still needs confirmation. Experiments at Shahjahanpur indicated that the distances to be given between rows depended on the fertility of the field; the poorer the field the smaller the distance between the rows. Experiments on inter-culture showed that inter-culture is absolutely necessary for the sugarcane crop, that depth of hoeing is more important than the number of hoeings and that two deep hoeings in each irrigation have given the best results. At Padegaon in 1935-36, sugarcane trash was mixed with sann hemp when ploughed in August as it was expected that the sann hemp during its decomposition would supply the necessary assimilable nitrogen for the decomposition of trash while the trash would prevent the leaching down of nitrates from sann. Disintegration of trash was complete in two months but there was no particular advantage as a preventive measure against leaching. However, humus, as well as total nitrogen figures were slightly higher in this treatment.

The crop sown in lines 2ft. apart on flat and in trenches and then ridged before rains compares very favourably with that sown on flat one ft. apart (ordinary sowing). The acre-yields of cane were 1,036.4 maunds (38.1 tons), 1,035.2 maunds (38.0 tons), and 1,009.8 maunds (37.1 tons), respectively. The chief advantage in favour of line sown crop is that all post-sowing operations can be done by bullock labour. Further the crop thus sown escapes lodging a good deal even on rich soils.

Results also show that in the Punjab distances over 2ft. in between the rows are not economical even for a variety like Co. 213.

On very poor soils closer planting has given better results than wider planting.

(7) *Ratooning.*

Ratooning is a subject concerning which there has been a good deal of controversy particularly since there is evidence that ratooning causes an increase in insect pests. For example, in the Punjab in 1929-30, owing to the heavy frost in the previous year cane setts were scarce all over the province and therefore ratooning was resorted to on a more than usual scale. This perhaps had something to do with the general prevalence of the insect pest *Pyrilla* in that year. Canes differ also to some extent in

their performance as plant canes and as ratoons. In an experiment in Burma in 1932-33, Co. 290 gave the highest yield of sucrose as plant cane followed by P.O.J. 2714, P.O.J. 2878, while, as ratoon, P.O.J. 2714 gave the heaviest yield of sucrose closely followed by Co. 290 and H. 109. On the other hand, in the same year in Bombay P.O.J. 2878 gave the best results as ratoon, E.K. 28 coming next. In the Punjab in 1934-35, Co. 213 did not ratoon well but Co. 223, Co. 205 and Co. 285 ratooned well for a number of years. In Madras at Palur, the same year an experiment to test the value of ratooning showed that the saving in the cost of cultivation was not commensurate with the loss of yield.

Experiments at Anakapalli in 1935-36 indicated that Co. 243 did well in both ratoon and plant crop closely followed by Co. 281. There was a greater amount of *Pyrilla* attack in the ratoon crop in wet land than in the planted crop. In Jorhat in Assam in a preliminary trial with ratoon canes Co. 407 gave the highest outturn both in respect of yield of cane and total sucrose, followed in order by Co. 410, Co. 408 and Co. 413. Co. 407 in this case gave 29.19 tons cane and 3.46 tons of sucrose per acre.

The Sugar Committee of the Imperial Council of Agricultural Research in July, 1936, considered the views on ratooning of the Directors of Agriculture in Provinces and States and of factory owners and cane growers. Opinions were divided as to the effect of ratooning especially on the increase of insect pests in cane, and it was considered essential to find out the exact effect of ratooning by scientifically planned experiments. A special sub-committee was appointed to design such experiments and its proposals were considered by the Sugar Committee and Advisory Board in May 1937 and are now before the Governing Body.

Rotation.—At Madras, in 1930-31, a rotation experiment at Palur had been continued for eight years. The yields of cane of the four, three and two years rotations were 33.74, 29.28, 24.32 tons per acre respectively. The outturn of sugarcane in each rotation showed a nett profit of Rs. 359, Rs. 280 and Rs. 258 respectively for all the eight years. The net profits of the several rotations, taking all the crops together were respectively Rs. 81, Rs. 51 and Rs. 49. The results showed that a wide rotation of sugarcane seemed favourable in that area. At Pusa in 1933-34 and 1934-35 manurial and rotation experiments were conducted. The object of this experiment was to maintain the land in the best possible condition for a close cane rotation such as cane-fallow-cane. The experimental area was under cane during 1931-32. The treatments per acre were:—

- (1) fallow in *kharij* and fourteen tons farm-yard manure applied at the end of the monsoon,
- (2) fallow in *kharij* and complete minerals (40 lbs. N as ammonium sulphate, 52 lbs. P_2O_5 as superphosphate and 40 lbs. K_2O as potassium sulphate) applied at the time of planting,
- (3) sann hemp sown in *kharij* and ploughed in after eight weeks with 50 lbs. P_2O_5 as superphosphate, 50 lbs. N as rape-cake applied at the time of planting,
- (4) sann hemp sown in *kharij* and ploughed in after eight weeks, complete minerals (as in treatment No. 2) applied at the time of planting, and
- (5) fallow in *kharij* and standard manure (40 lbs. N as rape-cake and 50 lbs. P_2O_5 as superphosphate) applied at the time of planting.

The results showed that the treatment No. 1 gave the highest yield followed by treatment No. 3, while treatments Nos. 4 and 5 gave almost similar results as treatment No. 2. This experiment was repeated and the results got in 1935-36 confirmed the fact that treatment No. 1 is best at Pusa and treatment No. 3 a close second.

At Padegaon the rotation adopted is cane, cotton, sann and is mainly intended to study the residual effect of the various manurial treatments on cane. In cotton no residual effect of 75 and 150 lbs. nitrogen on the

previous cane is visible but 300 lbs. nitrogen does have an affect while the residual effect of superphosphate is observed even in the sann hemp crop taken in the third year after cane.

(8) Soil.

A study of Punjab cane soils made in 1933-34 and 1934-35 showed that the nature and the amount of water-soluble salts in the Punjab cane soils were in marked difference from those of the United Provinces and Bihar but the amount of exchangeable calcium in the Punjab soils is lower and this might be one of the causes of inferiority of Punjab canes. Very important studies of soil have been carried out at Padegaon in the Bombay-Deccan. The following extract from the report of that station for 1935-36 summarises the main results:—

Soil Physics Section.—With the completion of the genetic survey of the Pravara canals nine soil types have so far been identified. Studies on the processes of soil formation have revealed the degree of weathering undergone by various soils and the close relationship between soil types and the chemical composition of the parent material. In the soil fertility surveys effects of cane growing on the physicochemical properties of soil have been summarised and tentative conclusions drawn on the basis of statistical analysis of data. Soil fertility studies at the farm have given useful indications in the evolution of practical measures such as increasing the availability of phosphatic fertilisers and in the enhancement of the beneficial effects of fallows and rotations. Further progress has been made on the reclamation of chopan soils and in the proper understanding of the nature of soil degradation in general. Interesting results are now available on the causes of non-response of farm-yard manure in certain soils and their relationship with the soil microflora with suggestions for simpler means of amelioration of spoilt lands.

(9) Diseases.

In the early days of the Department of Agriculture one of the most troublesome diseases was the red rot of sugarcane due to an internal fungus. This is now no longer of importance since the process of sett selection eliminates any danger from this disease. The disease to which most attention has been given in recent years is the so-called mosaic disease, the name being given on account of the mottled or stripped appearance of the sugarcane leaves attacked. The mosaic disease belongs to the class of virus diseases. There is still some controversy as regards the actual cause of this disease, *viz.*, whether a virus consists of exceedingly minute living organisms or whether it is a non-living organised material. It appears to be transferred from one plant to another largely by sucking insects. In 1930-31 at Pusa, it was stated that mosaic disease lowered the weight of stripped canes by 4.6 per cent. in Co. 213 and 8.6 per cent. in Co. 205 and reduced the quality of the juice slightly. Co. 205 appeared to be peculiarly susceptible to mosaic but, as has already been mentioned, this variety was discarded for other reasons, *viz.*, because it was difficult to mill. The same year, at Lyallpur in the Punjab, results seemed to show a definite loss in tonnage from mosaic infection. On an average the healthy crop appeared to yield 21 per cent. cane, 17 per cent. juice and 21 per cent. gur more than the mosaic-affected crop. At Pusa, in 1935-36, the effect of mosaic on tonnage in Co. 213 was a reduction of the yield by 8.9 per cent. In the United Provinces in 1931-32 and 1932-33, Co. 313 although of considerable promise as one of the high yielders under good farming conditions, was withheld from introduction as stocks at most farms were found to have mosaic. In Madras in the same year, experiments on the relative resistance of different varieties to mosaic were continued. Twenty varieties of cane were grown intermixed with diseased Co. 213 material. Eight varieties

proved highly resistant while four proved susceptible. The reduction in sucrose was not marked but the reduction in weight of canes was considerably higher. At the Imperial Sugarcane Breeding Station, Coimbatore in 1933-34 and 1934-35 a programme of inbreeding was carried out with Co. 214 since this variety is useful in yielding seedlings immune to mosaic. In the United Provinces in the same year Co. 350 appeared susceptible to mosaic and the same weakness was shown by Co. 349 in Orissa. Sugarcane diseases are the subject of a research specially financed by the Imperial Council of Agricultural Research (total cost Rs. 1,04,980) and being carried out by the Imperial Agricultural Research Institute at Delhi and Pusa.

(10) *Insect pests.*

The main insect pests are the top-shoot-borer (*Scirpophaga nivella*), the stem borers (*Argyria sticticus* and *Diatraea venosata*) and the root borer (*Emmalocera depressella*). The damage due to these borers is very considerable and has been known to go as high as 90 per cent.

At Padegaon there was a significant fall in the top-borer attack in 1936 compared with the previous year due to phosphatic manuring which induced early vigorous tillering. Early planting in October and November was also found to minimise the attack. At Dacca in 1935-36, all canes suffered heavily from an attack of top and stem borer, no variety being spared. Stem-borer appeared in March followed by the top-borer in May and the damage continued up to July. The soil and weather conditions in the red laterite area in which the Dacca farm is situated, appeared to encourage insect-pests, the attack being 50-60 per cent. as against almost nothing in the neighbouring districts of Tipperah and Mymensingh. At the Dacca station the varieties were divided into four broad groups on the basis of their resistance to insect-pests. At Muzaffarnagar treatment by superphosphate and sulphate of potash with Niciphos tended to decrease the top-borer attack. At Jorhat, in Assam, light traps were used for controlling the top-shoot borer and a total of 2,859 moths were caught in 1935-36. Borer attack was found to be very bad in canes planted in May; it went up to 40 per cent. There appears to be a difference in the resistance to these pests by various types of canes but this has not yet been fully worked out at a sufficient number of centres or for a sufficient length of time. Studies have been carried out by the Imperial Entomologist and others of the life history and habits of all these pests and also of the insects which are parasites of these, with a view to utilising the latter for keeping down the borers. This method seems to have been applied with considerable success in Mysore where the parasite *Trichogramma minutum* has been bred in large numbers in the laboratory and liberated in the cane fields. A very important and accurate estimate on a large scale of the damage due to borers has been made by Dr. Haldane, Chief Chemist of Messrs. Begg Sutherland & Co. and this is appearing as an article in "Agriculture and Livestock in India", September, 1937. He estimates that the loss of sugar due to borer and disease by the group of ten factories in Northern India (Chanpatia, Barraha, Samastipur, Ryam, Marhowrah, Purthapore, Tamkahi, Chauri Bazar, Balrampur and Tulsipur) during the month of February, 1937, was 59,359 maunds or a financial loss per month of some Rs. 3,50,000 quoting sugar at Rs. 6-4 per maund. On a season of five months the loss may be estimated at some Rs. 17,50,000. The supply of sound cane to all factories would result in an increase of approximately 1 per cent. in the yield of sugar and a considerable reduction in the production of waste molasses. In addition, the improved quality of the raw material would permit of the production of a more uniform and better quality of sugar. Sugarcane pests are the subject of a special all-India research financed by the Imperial Council of Agricultural Research and centred at the Imperial Agricultural Research Institute, New Delhi. The question of possible parasites for sugarcane pests will be thoroughly studied.

(11) *Physiology.*

The best-laid-out manurial, irrigation and cultivation experiments are, however, only rather coarse methods of discovering the plants requirements. Much finer methods have to be employed if the life of the sugarcane plant is to be thoroughly understood and such investigation is the work of the plant physiologist. In several of the researches financed by the Imperial Council of Agricultural Research there is a definite physiological section in which the life processes of the plant are carefully scrutinised. In 1932-33 for example at the Mushari Research Station in Bihar, some 40 Coimbatore varieties were under observation and for 20 of these complete growth histories were worked out. From these observations it appeared that in that area sugarcane had two periods when it was growing very fast one about early July and the other towards the end of August or in early September depending upon whether a variety is early or late. When soil moisture fell below 5.7 per cent. in the first foot of soil, the growth of cane in North Bihar soils appeared to cease. In Madras 1930-31 it was found that Co. 213 was more resistant than J. 247. In Madras in 1934-35 observations were made on the root-system of the most important varieties to pick out the best of the types that resist drought. Under dry conditions Co. 213 and some of the sugarcane-sorghum hybrids developed a deep root system and were able to withstand dry conditions remarkably well. Co. 419 and Co. 243 were also equally good in that respect. Growth measurements indicated that the maximum growth takes place in the rainy season and growth generally ceases by the end of October. At Padegaon in 1934-35 a study of the periodical development of the root system showed a definite gradient from lower to higher doses of nitrogen. An examination of the intake of mineral nutrients indicated that the intake was very little during the formative stage and very considerable during the grand period stage. As regards the relative importance of the main elements from the standpoint of intake, potash came first and phosphate last. From the manurial standpoint, however, nitrogen and phosphates were found to be the most important. In North Bihar in 1932-33 it was found that the physical properties of soils appear more important than the chemical ones in determining the development of root systems. Comparative studies of the respiratory quotient and pressure of roots has explained why certain varieties of cane, e.g., Co. 210 always do better in years of scanty rainfall and on light soils.

Root Studies.—In Madras, wrappings and proppings form the most expensive item in the cultivation of cane and expense on this can be reduced by a study of the period of the cessation of growth. In the absence of cyclonic weather there is no necessity to wrap canes during the later stages of growth. The number of wrappings can be reduced from a maximum of 7 to a minimum of 2 by this knowledge. At the same station the study of the habit (*i.e.*, plant shape) of sugarcane varieties has been studied. A good erect habit facilitates manurial, cultural and harvesting operations.

At Padegaon in 1935-36 and previous years the salient features of higher manure have been studied by physiological experiments. These clearly indicate the favourable effect of increasing doses of nitrogen on tillering, high growth, leaf area and inter-nodal length. Brix figures show delay in maturity with higher doses. Monthly figures have also been obtained for the periodical intake of N, P, K and Ca. The greatest absorption of all the mineral constituents is during the later grand period stage. Based on this is a treatment in which a larger proportions of the top dressings have been given at earthing up. At Mysore in 1935-36 observations on the relative drought resistance of varieties in Mysore conditions showed that Co. 408, Co. 281, H.M. 606, H.M. 607, H.M. 609 and H.M. 603 were good draught resisters. At the same station it was also found that time and development of flowering have a bearing on the sugar value of canes. By noting the beginning of the flowering period, it may be possible to forecast the yield, basing the forecast on the observation of the number of internodes produced at the time of flowering.

(12) *Molasses.*

Since molasses are rich in potash, experiments have been carried out on the effect of composting molasses to find out the amount of potash rendered available under this treatment.

At Shahjahanpur in 1934-35 experiments in the application of molasses as a manure showed that the best results were got by the addition of 270 maunds of molasses per acre two months before planting. At Shahjahanpur in 1935-36 molasses were given two months before planting, the amounts being 90, 180 and 270 maunds given in one dose, combined with 60 lbs. nitrogen by itself and in combination with castor-cake and sulphate of ammonia. The results were that there was increase in yield of cane with increase in the quantity of molasses applied. The combination of molasses with either castor-cake or ammonium sulphate increased the yield equally. The application of 270 maunds molasses by itself gave 740 maunds per acre, with castor-cake 816.6 maunds, with ammonium sulphate 808.7 maunds. There was no effect of application of molasses on the sucrose percentage in cane. Another experiment was carried out in which molasses was soaked in a suitable quantity of bagasse in order to make it more easy to transport. In both cases molasses was applied at the rate of 250 maunds per acre against a 'no manure' plot. The molasses applied *as such* gave 954.7 maunds cane per acre. Bagasse soaked in molasses gave 902.2 maunds and the untreated plot gave 775.47 maunds. The 'no manure' plot showed a higher percentage of sucrose, the figures being 'no manure' 16.15 per cent., pure molasses 15.88 and bagasse soaked in molasses 15.98 per cent.

At Muzaffarnagar, in a manurial experiment neem-cake and molasses were significantly better than farm-yard manure and control but it was considered doubtful if molasses would profitably pay its way as its cost had then gone up to As. 4 to As. 6 per maund due to the opening up of a distillery at Meerut. The molasses-treated plot had the lowest juice purity. At Gorakhpur molasses-treated plots had the least percentage sucrose and the lowest purity as compared with control and castor-cake *plus* super-phosphate.

At Anakapalli the juice purity in molasses-treated plots in 1934-35 was as good as in any of the other plots treated with manures such as groundnut and sulphate of ammonia. In the following year at Anakapalli this result was confirmed and molasses gave as good yields as groundnut cake.

In the Punjab, on the other hand, in 1935-36, molasses used as fertilizer did not give the desired effect. It is believed that the plant food in the molasses was not present in a readily available form and that the products of the decomposition were toxic to the useful soil bacteria. A scheme is also in being for the manufacture of cattle feed from molasses. This is being carried out at the Indian Institute of Sugar Technology, Cawnpore.

Conclusion.

The various results of the above researches have been dealt with under a series of arbitrarily chosen heads in order to get a bird's-eye view of the work. The practical aim of these researches* taken as a whole the devising of a standard agricultural procedure suitable for each particular tract. This standard agricultural procedure should embody in itself all *proved* knowledge as to the best way of doing—

- (1) soil selection,
- (2) soil treatment (*i.e.*, tillage and inter-cultivation),
- (3) manurial (kind of manure, amount of manure, time of application),
- (4) watering (amounts and times),

* An appendix is given showing all the sugarcane research work financed by the Imperial Council of Agricultural Research.

- (5) other cultivation practices (*e.g.*, planting on furrow or flat, number of setts per acre, the time and manner of earthing up, spacing, etc.),
- (6) protection against fungoid, virus or insect diseases, and
- (7) harvesting times and methods.

The so-called Manjri method of sugarcane cultivation which held the field for so long in Bombay and which has been the basis of future improvement there, was an example of such a procedure worked out for a particular set of conditions. The Pusa method is another such system. Some such method or procedure worked out for each set of agricultural and climatic conditions should be the practical outcome of all the research work now done. Such a system would permit of widespread propaganda and also give a basis for further improvement since there is then something definite to improve.

That further improvement will depend largely on pure research, *i.e.*, on research designed to get behind the results to the real causes of these results, and particularly to the causes of variation in results from one set of conditions to another.

In this way pure and applied science perpetually reinforce one another.

APPENDIX.

Title of the scheme.	Period for which sanctioned.	Total cost.
<i>I. Recurring schemes now working.</i>		Rs.
(1) Grant to the Harcourt Butler Technological Institute for an experimental sugar plant and training of candidates in Sugar Technology.	5 years .	2,25,000
(2) Sugarcane Sub-station, Karnal	8 years .	1,32,000
(3) Sugarcane Research Scheme, Bihar and Orissa .	5 years .	2,25,850
(4) Scheme for Seedling Trials at Shahjahanpur .	Original grant of Rs. 6,000 was a lump sum grant. No period was specified. Extension for five years.	11,230
(5) Scheme for Sugarcane Research, Muzaffarnagar and Shahjahanpur, United Provinces.	5 years .	1,01,260
(6) Grant to Sugar Technologist for the Construction and Testing of an Improved Juice Boiling Bel.	Lump sum grant.	3,440
(7) Scheme of Investigation on the Possibilities of Manufacturing Khandsari Sugar by the Single Pan Method, Bihar and Orissa.	3 years .	6,000
(8) Sugarcane Research Scheme, Punjab	5 years .	1,33,000

Title for the scheme.	Period for which sanctioned.	Total cost.
		Rs.
(9) Extension of Sugarcane Work at the Jorhat Experimental Station, Assam.	5 years .	63,000
(10) Sugarcane Research Scheme in the Bombay-Deccan.	5 years .	3,86,402
(11) Scheme of Research on Mosaic and other diseases of Sugarcane.	5 years .	1,46,890
(12) Sugarcane Research Scheme, Madras . . .	5 years .	1,50,100
(13) Scheme for Breeding Thick Canes, Mysore . .	5 years .	21,000
(14) Sugarcane Seedling Testing Station, Dacca . .	10 years .	24,850
(15) Scheme for a bureau of Sugar Standards under the Sugar Technologist.	5 years .	32,610
(16) Scheme for experiments in devising a satisfactory small power crushing mill, Punjab.	Lump sum grant.	13,000
(17) Scheme for research and testing station for the indigenous system of sugar and gur manufacture.	5 years .	1,67,080
(18) Research on the genetics of sugarcane at Coimbatore.	5 years .	37,400
(19) Economic enquiry into the cost of production of crops in the principal sugarcane and cotton tracts in India.	..	..
<i>II. Schemes completed.</i>		
(20) Scheme for sugarcane crushing and gur boiling experiments in Bengal.	3 years .	5,380
(21) Experiments in designing a satisfactory power sugarcane crushing mill, United Provinces.	Lump sum grant.	10,410
(22) Experiments in designing a satisfactory power sugarcane crushing mill, Bihar and Orissa.	Lump sum grant.	8,000
<i>III. Schemes started in 1936.</i>		
(23) Scheme of research on the chemistry of sugarcane (Imperial Institute of Agricultural Research).	3 years .	23,000
(24) Research on the developmental morphology and anatomy of sugarcane, sorghum hybrids and wild saccharums.	3 years .	7,562
(25) Sugarcane research in the North-West Frontier Province.	5 years .	63,750

Title of the scheme.	Period for which sanctioned.	Total cost.
<i>III. Schemes started in 1936—contd.</i>		Rs.
(26) Preparation of cattle food from molasses by the Sugar Technologist, Imperial Council of Agricultural Research, Cawnpore.	2 years .	10,000
(27) Sugarcane Insect pests scheme (Imperial Institute of Agricultural Research).	3 years .	96,000
(28) Baroda scheme for investigation of suitable types of canes for Gujarat.	5 years .	1,330
(29) Scheme for investigations of mosaic and other sugarcane diseases.	5 years .	1,04,980

(4) Letter, dated the 2nd July, 1937, from the Imperial Council of Agricultural Research, Simla.

Subject :—SUGAR QUESTIONNAIRES.

In continuation of this Department letter, dated the 23rd June, 1937, I am directed to forward herewith 6 copies each of the following statements, prepared by the Director, Imperial Institute of Sugar Technology, Cawnpore, relating to the General Questionnaire:—

- (i) *Question 50.*—Statement showing the average number of days of actual working of factories.
- (ii) *Question 59.*—Statement showing production of molasses.
- (iii) *Questions 106 and 107.*—Statement showing figures for export of molasses.

2. Six copies of a statement showing area under improved varieties of sugarcane (*vide* Question 1 of the Questionnaire for Local Governments) are also forwarded herewith, as promised in this Department letter, dated the 21st June, 1937.

3. Information in respect of other questions will be sent to the Board as soon as ready.

Statement showing the average number of days of actual working of factories.

Provinces.	Average number of working days.						
	1936-37 (Est.)	1935-36.	1934-35.	1933-34.	1932-33.	1931-32.	1930-31.
United Provinces	130	134	107	112	136		
Bihar	140	124	109	105	149	Not available.	Not available.
Other Provinces	127	112	90	84	112		

The reduction in the number of working days in 1933-34 was due to various causes: delay in completion of new factories, damage and dislocation caused by the earthquake in Bihar, and a poor cane crop in the western parts of the United Provinces. In 1934-35 also the reduction was partly due to a very poor crop in the Punjab and in the western parts of the United Provinces.

PRODUCTION OF MOLASSES.

—	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37 (Est.)
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
From cane factories	48,000	69,208	130,419	190,384	233,882	337,128	402,300
„ gur refineries	20,500	48,600	58,239	39,770	21,935	32,556	19,300
„ Khandasaris (Est.)	200,000	250,000	275,000	200,000	150,000	125,000	125,000
TOTAL	268,500	365,808	461,658	430,154	405,817	494,684	546,600

There are some marketing arrangements for molasses with the Indian Molasses Co., Ltd., Calcutta. As far as information is available in this office, the above Company purchased molasses in 1936 from a very few factories of the United Provinces, Bihar and Bengal. The average prices paid by the Company in 1936 to the factories in the United Provinces and Bihar amount to 1 anna 1-6 pies per maund and 2 annas 1-4 pies per maund respectively. The average price for all factories comes to 1 anna 5-01 pies per maund.

The figures for export of molasses (including palmyra and cane jaggery) as published in the "Accounts relating to the Sea-borne Trade and Navigation of British India".

	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Molasses (including palmyra and cane jaggery)—							
To United Kingdom .	..	..	7	179	153	..	13,622
„ Ceylon	390	658	707	899	890	935	933
„ Other countries . .	79	82	106	123	110	101	140
“For Orders” Cargoes—							
To Union of South Africa .	..	..	..	..	..	..	9,500
Total .	469	740	819	1,201	1,153	1,026	24,195

Further details are not available in this office.

Area under improved varieties of cane in different provinces.

Provinces.	1930-31.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.
United provinces	Acres. 514,691	Acres. 678,774	Acres. 1,187,778	Acres. 1,445,478	Acres. 1,560,000	Acres. 1,998,000
Punjab	70,000	120,350	179,000	173,661	201,873	219,550
Bihar and Orissa	70,484	189,418	236,000	361,300	400,600	420,900
Bengal	100,000	100,000	125,000	175,415	130,838	244,326
Madras	10,000	26,974	52,900	58,749	61,605	68,538
Bombay	Nominal.	Nominal.	6,400	9,872	16,373	22,480
North-West Frontier Province	40,500	38,000	38,000	43,000	38,144	51,000 (Est.)
Assam	6,900	7,750	8,800	9,089	8,186	14,552
Central Provinces	4,269	7,013	8,441	14,503	15,490	16,901
Burma	250	2,200	3,869	4,190	12,610	14,876
Total	817,094	1,170,479	1,845,768	2,295,257	2,445,719	3,971,153

(5) Letter, dated the 20th July, 1937, from the Imperial Council of Agricultural Research, Simla.

Subject :—SUGAR QUESTIONNAIRE.

In continuation of this Department letter, dated the 2nd July, 1937, I am directed to forward herewith 6 copies each of the statements showing total amounts of cane purchased by factories in India and the price paid therefor during 1935-36 and 1936-37, *vide* Questions 25 and 43 of the General Questionnaire. Information for the previous years is not available with the Director, Imperial Institute of Sugar Technology.

2. As regards Question 64, *ibid.*, the opening stock with sugar factories in the beginning of November, 1936, was estimated to be 128,000 tons. It is estimated that the stock at the end of the current season, *i.e.*, about the 31st October, 1937, will be 125,000 tons.

3. With regard to the second part of items 50 and 59 of the General Questionnaire, the Director, Imperial Institute of Sugar Technology, states that—

(i) the duration of the cane crushing seasons, except the seasons 1933-34 and 1934-35 (which were abnormal due to reasons explained in reply to the first part of question 50), is considered to be adequate for economical working of factories.

(ii) the price of molasses has been nominal as there has been practically no demand for it. [Statements furnishing answers to first parts of questions 50 and 59 were sent under this Department letter No. F. 32-(3)/37-A., dated the 2nd July, 1937.]

Enclosure.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1935-36.

No. of factories from which returns have been received.	Total cane purchased, 1935-36.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane.	Gate cane.	Outstation cane.	
	Mds. Srs.	Mds. Srs.	As. p.	As. p.	
United Provinces—					1935-36.
1	681,186 26	1,416,314 24	5 11-76	7 4-08	Nov. to April.
2	1,754,740 27	1,310,603 16	6 2-47	6 8-08	Nov. to March.
3	893,540 26	1,799,020 0	6 4-8	8 2	Nov. to April.
4	618,177 30	107,537 0	5 11-2	6 6-3	Dec. to April.
5	951,498 10	1,574,439 0	5 7-58	6 8-7	Nov. to April.
6	898,188 8	338,767 11	5 5-85	6 8	Dec. to March.
7	680,508 31	814,454 34	5 8-74	6 8-76	Nov. to March.
8	1,062,413 0	781,559 0	5 4-75	7 3-7	For April only.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1935-36—contd.

No. of factories from which returns have been received.	Total cane purchased, 1935-36.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane	Gate cane.	Outstation cane.	
	Mds. Srs.	Mds. Srs.	As. P.	As. P.	1935-36.
United Provinces— contd.					
9	745,035 29	1,306,114 11	5 7-86	6 8-9	Nov. to March.
10	772,474 0	867,700 0	6 1-9	6 8-15	Nov. to April.
11	32,750 10	..	5 3	..	For December only.
12	323,820 24	1,966,078 25	6 3-7	6 5-35	Nov. to March.
13	904,065 20	2,015,971 0	5 6-57	6 2-8	Nov. to May.
14	864,802 11	2,515,077 14	6 2-07	6 4-03	Nov. to April.
15	1,322,199 19	410,440 30	5 10-7	6 5-75	Dec. to March.
16	11,347 0	..	5 3-8	..	Nov. to Feb.
17	366,387 0	1,153,424 30	6 0-5	6 9-9	Nov. to April.
18	914,600 10	260,833 16	5 10-08	7 6-3	Do.
19	59,556 0	9,811 0	6 0-3	6 0-5	Jan. to March.
20	379,597 10	..	5 3-2	..	Nov. to March.
21	1,936,669 22	559,458 28	5 4-74	5 10-87	Nov. to May.
22	2,274,938 7	2,172,926 36	5 10-07	6 10-07	Do.
23	694,513 11	556,628 5	5 4-63	5 10	Do.
24	670,065 14	1,658,480 16	5 2-42	5 8-82	Nov. to March.
25	432,803 11	960,006 6	5 2-66	5 6-9	Dec. to April.
26	2,038,759 29	2,753,068 30	5 3-66	5 2-6	Nov. to Mar.
27	494,666 10	2,198,179 5	5 8-1	6 2-3	Nov. to May.
28	2,332,621 20	2,568,804 30	6 3-04	6 3-62	Nov. to May.
29	2,353,320 0	3,509,798 0	5 5-8	5 10-33	Do.
30	145,663 0	1,145,793 0	6 1-1	7 2-3	Dec. to April.
31	497,983 23	..	5 0-6	..	Dec. to Mar. and May.

Statment showing total cane purchased by each Factory in India and the prices paid therefor during 1935-36—contd.

No. of factories from which returns have been received.	Total cane purchased, 1935-36.				Average price paid per maund of cane delivered at factory.		Period to which the figures relate 1935-36.
	Gate cane.		Outstation cane.		Gate cane.	Outstation cane.	
United Pro- vinces— contd.	Mds.	Srs.	Mds.	Srs.	As.	P.	1935-36.
22	1,911,924	30	302,294	0	6	0·4	Nov. to May.
23	173,146	24	..	..	5	4·68	Dec. to April.
24	2,325,555	0	3,288,752	0	5	4·5	Nov. to May.
25	1,432,233	10	1,493,576	16	5	0	January to May.
26	2,908,681	10	103,399	0	6	4·17	Dec. to May.
27	1,623,290	19	1,420,947	20	5	4·5	Nov. to May.
28	265,529	20	..	..	5	2·14	Dec. to April.
29	1,199,636	20	807,997	30	5	4·68	Do.
30	754,255	6	234,798	33	5	3·35	Dec., Jan. and March.
31	1,549,867	10	197,279	0	5	8·2	Nov. and Jan. to April.
32	1,063,394	30	296,747	20	6	0·85	Nov. to April.
33	1,965,739	20	223,524	0	5	5·46	Nov. to March.
34	2,516,602	5	121,519	0	5	7	Nov. to May.
35	2,095,260	0	430,385	10	5	5·14	Nov. to April.
36	2,279,786	10	479,060	30	5	8·38	Do.
37	2,571,967	25	356,302	20	5	8·77	Nov. to May.
38	2,456,039	0	454,792	10	5	5·3	Nov. to April.
39	1,638,350	0	277,151	0	5	9·9	Do.
40	3,608,845	0	46,438	10	6	2·14	Do.
41	1,723,004	0	601,118	20	5	7·28	Do.
42	897,182	0	127,349	0	5	9·6	Do.
43	2,657,583	0	25,726	20	5	7·9	Nov. to May.
44	445,879	0	739,421	30	5	3	Dec. to March.
45	4,779,189	10	2,010,436	30	5	8·93	Nov. to April.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1935-36—contd.

No. of factories from which returns have been received.	Total cane purchased, 1935-36.				Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.		Outstation cane.		Gate cane.	Out-station cane.	
	Mds.	Srs.	Mds.	Srs.	As. p.	As. p.	1935-36.
United Pro- vinces— concl'd.							
56	2,690,989	20	241,298	20	6 0·45	6 2·55	Nov. to May.
57	1,493,179	0	694,627	20	5 5·25	5 1·82	Nov. to April.
58	1,296,466	0	..		6 9·15	..	Ditto.
59	869,952	31	1,480,054	25	5 6·42	6 1·62	Ditto.
60	2,025,530	15	48,353	20	5 3·25	5 1·5	Nov. to Mar.
61	2,293,520	10	585,465	0	5 4·5	5 10·25	Nov. to May.
62	904,310	20	70,248	5	5 7·86	5 5·4	Ditto.
63	2,577,120	0	..		5 11	..	Ditto.
Behar—							
1	1,319,388	0	1,790,265	0	6 2·37	6 8·62	Nov. to April.
2	2,416,708	0	1,124,440	0	5 7·66	7 1·5	Nov. to May.
3	1,668,297	0	1,267,593	0	6 1·26	6 5·9	Nov. to April.
4	1,047,366	0	1,458,400	30	5 11·01	6 7·1	Ditto.
5	723,020	10	447,827	10	5 3	5 2	Dec. to Mar.
6	1,930,811	20	..		5 9·23	..	Nov. to April.
7	1,445,925	20	1,356,325	30	5 7·53	6 7·32	Ditto.
8	707,617	20	1,976,650	10	6 11·2	7 1·36	Ditto.
9	1,578,201	30	1,625,893	20	5 9·78	6 2·75	Ditto.
10	1,088,251	0	921,027	20	5 3	5 4·9	Ditto.
11	1,160,954	20	1,085,677	30	5 9·5	6 8·4	Nov. to Mar.
12	1,202,692	0	1,208,402	0	5 11·5	6 5·5	Dec. to April.
13	12,85,502	36	1,966,947	11	5 4·63	6 4·7	Nov. to April.
14	305,060	0	3,108,977	0	6 2	6 9	Nov. to Mar.
15	61,409	0	79,867	0	5 3	6 3	For Feb. only.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1935-36—contd.

No. of factories from which returns have been received.	Total cane purchased, 1935-36.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane.	Gate cane.	Out-station cane.	
	Mds. Srs.	Mds. Srs.	As. p.	As. p.	1935-36.
Behar—contd.					
16	3,658,457 0	1,715,097 0	6 1-66	6 10	Nov. to Mar.
17	968,312 0	856,438 0	5 7-5	5 7-43	Nov. to April.
18	1,308,677 0	497,947 0	5 7-4	6 5-7	Ditto.
19	349,893 30	1,836,522 10	5 2-25	5 2-2	Dec. to April.
20	918,091 0	1,964,256 20	5 9-7	6 6-24	Nov. to April.
21	580,837 30	2,368,722 30	5 6-3	5 7-26	Ditto.
22	1,896,889 10	517,185 10	5 7-9	6 3-5	Ditto.
23	753,549 0	1,539,965 0	5 8	6 8-7	Nov. to Mar.
24	314,327 15	1,301,314 10	5 8-2	6 6-8	Nov. to April.
25	1,742,369 0	648,871 10	7-26	6 1-76	Ditto.
26	966,012 0	870,185 0	5 10-7	6 6-05	Nov. to March.
27	42,268 20	36,629 15	5 2-35	5 6-15	Dec. to March.
28	81,155 30	393,198 3	5 5-5	6 5-12	Nov. to April.
29	601,306 0	563,298 0	5 0-95	5 10-35	Nov. to March.
30	793,516 20	2,879,116 10	5 1-55	6 3-9	Dec. to March.
31	1,632,896 25	2,250,090 15	5 1-52	6 4-33	Nov. to April.
32	526,270 0	1,226,822 37	5 2	5 9-9	Ditto.
Other Pro- vinces.—					
1	56,947 0	..	5 1	..	Nov. and Dec. only.
2	389,696 20	485,502 11	5 7-4	7 4-44	Nov. to March.
3	707,183 30	689,842 0	6 3-24	7 1-84	Ditto.
4	406,827 36	251,892 17	4 11-44	5 9-9	Nov. to Feb.
5	546,971 32	840,957 38	5 3-63	6 3-5	Nov. to March.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1935-36—concl'd.

No. of factories from which returns have been received.	Total cane purchased, 1935-36.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane.	Gate cane.	Out-station cane.	
Other Provinces— <i>cont'd.</i>	Mds. Srs.	Mds. Srs.	As. p.	As. p.	1935-36.
6	203,146 30	..	6 0	..	Jan. Feb. and April.
7	340,475 0	..	6 3	..	Nov. to March.
8	51,400 23	158,042 26	5 6·75	6 2·15	Feb. and March.
9	79,674 7	..	6 9	..	Dec. Feb. and March.
10	555,553 11	923,113 3	5 10	6 3·5	Nov. to April.
11	937,267 37	2,434,782 9	6 3	6 6·75	Nov. to May.
12	309,269 29	1,682,961 36	5 1·3	5 8·27	Nov. to April.
13	75,595 16	..	6 3·9	..	For Feb. only.
14	..	162,176 30	..	8 2·8	For May only.
15	1,078,5000 19	957,886 21	5 0·5	6 9	Nov. to March.
16	128,615 0	..	5 9·16	..	Dec. to May.
17	1,120,340 0	..	7 8	..	Dec. to April.
18	139,623 20	..	5 6·6	..	Dec. to May.
19	164,845 24	..	6 6	..	Jan. to May.
20	1,051,983 30	..	..	..	Dec. to May.
21	657,643 2	48,507 30	6 6·8	6 10·65	Jan. to April.
22	2,610,713 0	..	6 11·93	..	Jan. to May.
23	45,649 0	..	6 6·6	..	Feb. and April.
24	463,944 12	..	5 10·5	..	Nov. to April.
25	1,863,145 27	..	6 6	..	Feb., Mar. and May.
26	788,794 0	..	6 6	..	Jan. to March.
27	2,867,562 7	..	..	..	Nov. to May.
28	..	1,863,202 0	..	5 10·54	Jan. to May.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1936-37.

Number of factories from which returns have been received.	Total cane purchased, 1936-37.				Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.		Outstation cane.		Gate cane.	Out-station cane.	
United Provinces—	Mds.	Srs.	Mds.	Srs.	As. p.	As. p.	1936-37.
1	1,224,148	36	449,735	8	4 1·06	5 5·94	Nov. & Jan. to March.
2	2,329,663	11	1,568,644	22	5 2·28	5 6·74	Dec. to April.
3	1,749,110	37	1,668,783	30	5 1·66	5 11	Nov. to April.
4	1,279,046	0	128,456	30	4 7·66	5 0·08	Nov. to May.
5	1,962,614	30	1,788,170	22	4 5·04	5 0·53	Ditto.
6	1,331,368	6	634,148	25	4 9·57	5 5·88	Nov. to March.
7	1,327,220	21	954,014	34	4 9·4	5 4·49	Nov. to April.
8	1,456,411	0	332,797	0	4 11·32	5 4·12	Nov. to Feb.
9	1,299,417	30	1,039,952	10	4 7·25	5 2	Nov. to April.
10	1,719,833	0	308,890	0	4 5·3	4 11·65	Ditto.
11	613,395	12½	1,113,139	36½	4 7·33	5 2·33	Nov. to Feb.
12	1,158,743	25	1,527,595	10	4 6·01	5 8	Nov. to April.
13	1,794,599	1	3,183,314	16	4 7·54	5 2·4	Nov. to May.
14	1,865,123	31	592,847	6	4 6·56	5 2	Dec. to March.
15	954,827	32	1,662,978	13	4 7·5	5 3·15	Nov. to March.
16	512,202	0	1,572,798	0	5 10·14	5 8	Nov. to May.
17	1,271,013	0	260,186	0	4 8·45	5 7·45	Nov. to April.
18	153,428	0	...	...	5 3·35	...	Dec. to Feb.
19	721,090	30	...	...	4 3·87	...	Dec. to April.
20	1,293,256	19	1,334,018	29	4 7	4 9·76	Dec. to Feb.
21	1,096,190	0	1,048,090	0	4 10·5	6 1·5	Nov. to Jan.
22	933,944	3	203,398	17	4 11	5 1·5	Dec. to April.
23	537,190	0	579,914	20	4 6	5 7·3	Dec. & Jan. only.
24	597,949	32	788,018	2	4 6·25	4 11·75	Dec. to March.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1936-37—contd.

No. of factories from which returns have been received.	Total cane purchased, 1936-37.				Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.		Outstation cane.		Gate cane.	Outstation cane.	
	Mds.	Srs.	Mds.	Srs.	As.	p.	1936-37.
United Provinces— contd.							
25	1,345,638	25	1,200,495	37	5	0	Nov., Dec. April & May.
26	1,074,705	10	1,413,211	0	4	7-43	Dec. to April.
27	2,547,008	0	1,581,153	10	4	8-68	Ditto.
28	1,788,437	0	1,757,169	0	4	6-75	Dec. to March.
29	260,193	35	731,982	30	4	10-66	Jan. to March.
30	475,070	12	...		3	9-49	Dec. to March.
31	1,255,139	20	334,207	21	4	7-13	Ditto.
32	167,676	30	...		4	5-1	Dec., Feb. & March.
33	1,998,215	0	1,950,917	0	4	8-75	Nov. to March.
34	2,096,225	0	2,370,254	0	4	4-66	Nov. to April.
35	749,188	10	1,151,550	0	4	5-3	Dec., Jan., Mar. & April.
36	1,318,931	20	1,575,907	10	4	8-68	Dec. to May.
37	1,888,213	23	923,256	4	4	5-22	Nov. to April.
38	265,614	30	...		4	0-3	Dec., Jan. & Mar. to May.
39	1,596,412	20	28,367	4	4	2-47	Dec. to May.
40	1,651,129	0	335,751	29	4	5-05	Nov. to April.
41	2,402,549	0	...		4	1-78	Nov. to May.
42	2,319,696	10	28,489	20	4	4-41	Dec. to May.
43	1,712,885	20	94,215	20	4	5-7	Dec. to March.
44	2,746,455	0	37,128	30	4	4-18	Dec. to May.
45	2,071,018	10	196,598	30	4	4-28	Dec. to April.
46	2,912,921	30	416,117	20	4	1-74	Dec. to May.
47	3,303,961	20	73,163	0	4	2-65	Ditto.
48	2,218,505	30	122,484	10	4	5-97	Dec. to March.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1936-37—contd.

No. of factories from which returns have been received.	Total cane purchased, 1936-37.				Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.		Outstation cane.		Gate cane.	Outstation cane.	
	Mds.	Srs.	Mds.	Srs.	As. p.	As. p.	1936-37.
United Provinces— concl.							
49	1,500,337	30	61,254	0	4 5·87	5 0·02	Dec. to April.
50	3,754,408	5	...		4 5·4	...	Dec. to May.
51	1,686,516	30	622,139	10	4 4·83	5 0·87	Nov. to May.
52	886,196	10	...		4 8	...	Nov. to March.
53	2,270,614	10	...		4 2	...	Dec. to May.
54	772,282	10	1,147,204	20	4 6·55	5 5·62	Dec. to March.
55	5,710,269	0	2,293,650	10	4 2	4 1·17	Dec. to May.
56	3,460,805	0	...		4 6·3	...	Ditto.
57	2,310,216	0	526,517	20	4 2·06	4 9·34	Ditto.
58	2,244,055	10	...		4 6·91	...	Ditto.
59	1,119,026	0	1,069,394	0	4 3·92	5 1·16	Dec. to April.
60	2,132,092	10	..		4 3·62	..	Do.
61	1,676,487	20	366,040	0	4 4·45	4 11·95	Dec., Feb. and April.
62	943,555	27	44,200	0	4 4·15	4 2·64	Dec. to April.
63	2,229,835	0	..		4 3·75	..	Dec. to May.
64	260,443	20	..		4 0·75	..	Mar. to May.
Bihar—							
1	1,866,907	32	93,294	0	4 0·4	4 5·53	Jan. to May.
2	2,596,778	0	1,448,774	0	4 5·7	4 11·7	Nov. to May.
3	2,302,676	0	539,431	0	4 4·37	5 3·25	Dec. to Apl.
4	3,208,414	0	1,283,447	0	5 0·31	5 2·26	Nov. to May.
5	1,742,164	20	809,900	0	4 7·2	4 7·44	Nov. and Jan. to May.
6	1,148,278	0	790,663	0	3 9·62	3 9·62	Jan. to May.
7	2,437,672	0	..		4 8·7	..	Dec. to May.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1936-37—contd.

Number of factories from which returns have been received.	Total cane purchased, 1936-37.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane.	Gate cane.	Out-station cane.	
	Mds. Srs.	Mds. Srs.	As. p.	As. p.	1936-37.
Bihar—contd.					
8	1,724,912 30	882,690 10	4 9·72	5 8·01	Dec. to Mar.
9	1,216,021 0	1,990,787 10	5 6·82	5 4·46	Dec. to May.
10	1,990,605 0	1,611,874 30	5 1·87	5 3·58	Do.
11	265,308 0	169,284 0	4 10·6	5 7·2	For Dec. only.
12	1,760,533 0	1,418,736 0	4 10·36	5 3·22	Dec. to May.
13	2,241,575 20	1,481,206 20	4 8·33	5 2·6	Nov. to May.
14	2,327,473 26	1,721,706 12	4 4·18	5 2·95	Do.
15	369,506 0	3,677,061 0	5 2	5 9·37	Nov. to Apl.
16	526,661 0	2,004,447 0	5 1·6	5 10	Do.
17	1,807,720 0	971,641 0	3 11·8	4 4·13	Dec. to May.
18	2,096,909 20	1,362,42 20	4 10·51	5 3·32	Nov. to May.
19	538,917 20	2,097,450 30	4 7·97	5 3·87	Nov. to Apl.
20	1,541,740 10	2,181,239 0	5 1·81	5 4·8	Dec. to May.
21	820,371 20	2,903,863 30	4 5·44	4 5·88	Do.
22	1,847,490 0	..	4 1·75	..	Jan. and Mar. to May.
23	882,461 0	1,810,825 0	4 10·11	5 7	Dec. to Apl.
24	1,249,783 10	1,211,057 30	4 8·5	5 2·77	Do.
25	2,475,869 20	78,209 10	4 2·45	4 9·2	Nov. to May.
26	1,554,390 0	1,308,858 0	4 9·04	5 5·47	Nov. to Apl.
27	1,753,602 20	32,766 0	3 10·11	3 9·73	Jan. to May.
28	192,428 0	10,246 0	4 0·01	4 7·5	Dec. to May.
29	136,888 35	361,448 10	4 4·2	5	Do.
30	770,558 0	414,846 9	4 4	5 7·5	Dec. to Apl.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1936-37--contd.

No. of factories from which returns have been received.	Total cane purchased, 1936-37.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane.	Gate cane.	Outstation cane.	
Other Pro- vinces—	Mds. Srs.	Mds. Srs.	As. p.	As. p.	1936-37.
1	520,311 0	1,831,392 23	4 6-52	5 2-54	Jan. and Mar.
2	1,899,060 5	1,867,508 35	4 5-47	5 4-63	Nov. to Mar.
3	757,882 17	1,475,790 25	4 2-75	4 9-8	Dec. to Apl.
4	1,824,652 22	1,314,838 22	4 4-97	4 6-77	Nov. to Apl.
5	556,423 3	675,309 12	4 10-46	5 9-11	Nov. to Mar.
6	1,539,643 20	700,913 0	5 0-47	5 4-28	Nov. to May.
7	1,150,342 0	996,433 0	4 4-62	4 10-8	Nov. to Mar.
8	190,832 30	286,865 0	4 3	4 3	For Feb. only.
9	12,216 34	..	4 8	..	For Mar. only.
10	2,370,164 31	1,432,205 16	4 4-97	4 6-76	Nov. to Apl.
11	397,773 25	..	5 0	..	Dec., Feb. and Mar.
12	57,115 0	..	5 6	..	For Nov. only.
13	21,884 10	402,571 2	3 11-8	4 11-72	Nov. to Feb.
14	157,513 24	..	3 6	..	Dec. to May.
15	1,078,387 30	889,007 29	5 1	5 8-5	Do.
16	1,156,303 17	1,298,387 31	5 9	6 4-5	Dec. to Apl.
17	219,097 2	1,354,876 24	4 7-23	5 3-27	Dec. to Mar.
18	695,830 0	..	6 5-43	..	Nov. to Apl.
19	907,745 14	1,904,798 23	5 6-5	6 11-3	Do.
20	1,696,865 6	112,072 22	7 8	7 8	Do.
21	12,757 0	71,428 20	8 6	10	Dec. to Jan.
22	117,491 0	..	4 0-3	..	Jan. to Mar. and May.
23	1,901,666 28	..	6 8-9	..	Nov. to Apl.
24	364,313 0	..	7 5	..	Dec. to Feb.

Statement showing total cane purchased by each Factory in India and the prices paid therefor during 1936-37—concl'd.

No. of factories from which returns have been received.	Total cane purchased, 1936-37.		Average price paid per maund of cane delivered at factory.		Period to which the figures relate.
	Gate cane.	Outstation cane.	Gate cane.	Outstation cane.	
	Mds. Srs.	Mds. Srs.	As. p.	As. p.	1936-37.
Other Provinces— <i>cont'd.</i>					
25	269,050 0	..	4 4·95	..	Dec. to May.
26	772,832 39	..	..	..	Dec. to Apl.
27	57,567 23	..	6 2	..	Feb. to Apl.
28	977,010 32	130,663 14	6 0·26	5 7·75	Jan. and Apl.
29	2,953,409 0	..	7 2·28	..	Jan. to May.
30	394,636 32	..	7 4·15	..	Nov. and Dec.
31	72,912 8	..	6	..	Nov. to Mar.
32	489,445 13	..	5 4	..	Do.
33	1,004,819 0	126,341 24	5 6·6	5 11	Nov. to Feb.
34	599,152 0	35,794 0	5 10·15	5 6	Jan. and Feb.
35	318,242 0	878,767 0	6 6	6 6	Jan. to Mar.
36	2,703,398 0	..	5 9·6	..	Dec. Jan. and Mar. to May.
37	..	540,000 0	..	6 3	For Jan. only.

(6) *Letter, dated the 4th August, 1937, from the Imperial Council of Agricultural Research, Simla.*

Subject :—SUGAR QUESTIONNAIRES.

In continuation of this Department letter, dated the 20th July, 1937, I am directed to forward herewith six copies of the replies furnished by the Director, Imperial Institute of Sugar Technology, in respect of certain items of the questionnaires issued by the Tariff Board.

Enclosure.

REPLIES FURNISHED BY THE DIRECTOR, IMPERIAL INSTITUTE OF SUGAR TECHNOLOGY, FORWARDED BY IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH.

General Questionnaire.

89. Answer to both parts of the question is in the affirmative.
90. Some high-class people have a special liking for Java sugar.

93. Answer is in the affirmative. A scheme on sugar marketing was considered at the last meeting of the Sugar Committee, *vide* Appendix XIX of the printed proceedings (6 copies of the uncorrected proof already supplied to the Tariff Board).

94. Yes.

98. The establishment of a "futures" or "terminals" market will be advantageous to the trade.

99. (i) Six copies of a statement showing the estimated consumption of sugar in India are enclosed. The figures have been worked out by deducting from the gross supply, *viz.*, Initial Stock at main British Indian ports, production in modern factories and refineries, estimated *khandsari* production, and imports by sea), the total exports (including re-exports) by sea and land *plus* the closing stocks at the British Indian ports. As complete figures for (i) stocks, (ii) imports of sugar into India across the foreign possessions, and (iii) *khandsari* production are not available, the estimates of consumption are necessarily approximate. The majority of people in India use *gur*.

(ii) The increase in the consumption of sugar depends chiefly on the improvement in the economical condition of the masses and the lowering of the prices of the commodity.

Questionnaire for Local Governments.

7 & 14. Attention is invited to the note on the "Extension of Sugarcane cultivation in India" printed as Appendix VII of the proceedings of the ninth meeting of the Sugar Committee held on the 3rd and 4th May, 1937. Six copies of the uncorrected proof of the proceedings have already been supplied to the Tariff Board.

ESTIMATED CONSUMPTION OF SUGAR IN INDIA.

Year.	Total consumption.	Year.	Total consumption.
	Tons.		Tons.
1929-30 . .	1,325,000	1933-34 . .	932,000
1930-31 . .	1,216,000	1934-35 . .	1,015,000
1931-32 . .	1,016,000	1935-36 . .	1,010,000
1932-33 . .	926,000		

(7) Letter, dated the 18th August, 1937, from the Imperial Council of Agricultural Research, Simla.

Subject :—SUGAR QUESTIONNAIRES.

In continuation of this Department letter, dated the 4th August, 1937, I am directed to forward herewith 6 copies each of the replies furnished by the Director, Imperial Institute of Sugar Technology, to the following questions:—

General Questionnaire.—44, 47, 62.

Questionnaire for Local Governments.—42, 43, 17.

Enclosure.

44. (*General Questionnaire*) & 17. (*Local Government's Questionnaire*).—Minimum prices for sugarcane purchased by vacuum pan sugar factories and such open pan sugar concerns as come under the definition of a "factory" according to the Indian Factories' Act, are regulated according to the price of sugar, in the United Provinces and Bihar. The Local Governments of these provinces have framed "Sugarcane Rules" under the authority of the Sugarcane Act, 1934. Notifications promulgating these rules were issued on the 25th October, 1934, by the United Provinces Government and

on the 17th November, 1934, by the Bihar Government. The rules therefore came into force from the season 1934-35. They have, however, been amended every year since then in the light of experience gained.

It should be noted that the Sugarcane Act empowers Local Governments to fix minimum prices for sugarcane subject to the control of the Governor General in Council.

Sugarcane Rules have not been framed by Local Governments of other provinces. A proposal was made for introducing such rules in the Madras Presidency, but was dropped subsequently.

For details of the basis on which minimum sugarcane prices are regulated in the United Provinces and Bihar, reference may be made to the rules issued by the Local Governments of these provinces. It may be explained, however, that the sliding scales adopted by these Governments are not based on any definite formula but are the result of a compromise intended to ensure that the growers may not have to pay any portion of the excise duty and that the price of cane as compared with that of sugar may approximate to what it was during the two or three seasons following the grant of protection. Actually the minimum cane prices according to these scales are lower (by 6 to 9 pies per maund) than what they should be according to the basis recommended by the Sugar Committee of 1920*,—namely, that the price of a maund of cane should be one-half of the price of sugar made from that quantity of cane. The difference is specially large at higher price levels. On the other hand the grower gets an advantage in so far as the figure for price of sugar used in these scales is not the average price of sugars of all grades manufactured by all factories in the province, but the average of a specified number of highest price quotations.

Statement showing Fortnightly Minimum Price fixed by the Government of United Provinces for sugarcane purchased for vacuum Pan factories from November 1935 to July 1936.

Serial No.	Period.	Minimum prices of sugarcane per maund of 82½ lbs. avoirdupois.
		Rs. a. p.
1	1st Fortnight of November 1935	0 5 6
2	2nd " " " 1935	0 5 6
3	1st " " December 1935	0 5 3
4	2nd " " " 1935	0 5 3
5	1st " " January 1936	0 5 0
6	2nd " " " 1936	0 5 0
7	1st " " February 1936	0 5 0
8	2nd " " " 1936	0 5 0
9	1st " " March 1936	0 5 0
10	2nd " " " 1936	0 5 0
11	1st " " April 1936	0 5 0
12	2nd " " " 1936	0 5 0
13	1st " " May 1936	0 5 0
14	2nd " " " 1936	0 5 0
15	1st " " June 1936	0 5 0
16	2nd " " " 1936	0 5 0
17	1st " " July 1936	0 5 0
18	2nd " " " 1936	Not available

* See "Report of the Indian Sugar Committee, 1920", para. 218.

Statement showing Fortnightly Minimum Price fixed by the Government of United Provinces for sugarcane purchased for vacuum Pan factories from November 1935 to July 1936—contd.

Serial No.	Period.	Minimum prices of sugar cane per maund of 82½ lbs. avoirdupois.
	1936-37.	Rs. a. p.
1	1st Fortnight of November 1936	0 4 9
2	2nd " " " 1936	0 4 9
3	1st " " " December 1936	0 4 9
4	2nd " " " " 1936	0 4 6
5	1st " " " " January 1937	0 4 6
6	2nd " " " " " 1937	0 4 6
7	1st " " " " " February 1937	0 4 3
8	2nd " " " " " " 1937	0 4 3
9	1st " " " " " " March 1937	0 4 3
10	2nd " " " " " " " 1937	0 4 3
11	1st " " " " " " April 1937	0 4 0
*12	2nd " " " " " " " 1937	0 3 6
†13	1st " " " " " " May 1937	0 3 6

* Roorkee Tahsil of Saharanpur District, Mawani Tahsil and stations on the Eastern Daurala Tramways in Meerut district the rates were 0-3-3 per maund.

†(a) In Gorakhpur, Gonda and Bahraich districts, the rate of sugarcane will be at 0-3-3 per maund.

(b) In Dehra Dun and Bijnor districts, the rate of sugarcane was 0-3-9 per maund.

Statement showing Fortnightly Minimum Price fixed by the Government of Bihar for Sugarcane purchased for vacuum Pan Factories from November 1935 to May 1936.

Serial No.	Period.	Minimum prices of sugarcane per maund of 82 ½ lbs. avoirdupois.
		Rs. a. p.
1	1st Fortnight of November 1935	0 5 6
2	2nd " " " " 1935	0 5 6
3	1st " " " " December 1935	0 5 6
4	2nd " " " " " 1935	0 5 3
5	1st " " " " " January 1936	0 5 0
6	2nd " " " " " " 1936	0 5 0
7	1st " " " " " " February 1936	0 5 0
8	2nd " " " " " " " 1936	0 5 0
9	1st " " " " " " March 1936	0 5 0
10	2nd " " " " " " " 1936	0 5 0
11	1st " " " " " " April 1936	0 5 0
12	2nd " " " " " " " 1936	0 5 0
13	1st " " " " " " May 1936	0 5 0

Statement showing Fortnightly Minimum Prices fixed by the Government of Bihar for Sugarcane purchased for vacuum Pan Factories from November 1935 to May 1937.

Serial No.	Period.	Minimum prices of sugarcane per maund of 82½ lbs. avoirdupois.
	1936-37.	Rs. a. p.
1	November 1935	0 4 9
2	1st Fortnight of December 1936	0 4 9
3	2nd " " " 1936	0 4 9
4	1st " " January 1937	0 4 6
5	2nd " " " 1937	0 4 6
6	1st " " February 1937	0 4 6
7	2nd " " " 1937	0 4 6
8	1st " " March 1937	0 4 3
9	2nd " " " 1937	0 4 0
10	1st " " April 1937	0 3 9
11	2nd " " " 1937	0 3 3
12	1st " " May 1937	0 3 3
13	2nd " " " 1937	0 3 3

47. (*General Questionnaire.*)—Two statements have been submitted separately showing the total quantity of cane purchased by each factory in India (separately for gate cane and outstation cane) and the prices paid therefor during the season 1935-36 and 1936-37. Two statements showing fortnightly minimum prices during 1935-36 and 1936-37 as fixed under the Sugarcane Rules in the United Provinces and Bihar are attached. A comparison of the figures contained in the two sets of statements shows that the prices actually paid were substantially higher than the prescribed minimum prices during 1935-36, but the difference became much smaller during 1936-37.

It may be stated, however, that in places where the supply of cane has been in excess of the requirements of factories, the growers have sometimes received less than the prescribed minimum price. The following extract from a note by the Board of Revenue, United Provinces, which was placed before a Conference held at Nainital on the 18th and 19th June, 1937, is of interest in this connection:—

"It has come to the notice of the Board that in one instance agreements were made by which the licensed purchasing agents were to supply cane f.o.r. mill gate siding at the minimum Government rates on the consideration of the payment of a commission at a rate of two pies per maund of cane. For a supply, f.o.r. mill gate siding, the agent has to bear the railway freight on the cane supplied by him in addition to the cost of supervision and management at the purchasing centre. The lowest railway freight for a broad gauge wagon of a capacity of nearly 500 maunds is Rs. 10; the incidental expenses for the purchase and loading of so much cane are, say, Rs. 4: the total expenditure may be estimated at Rs. 14. The commission rate of two pies per maund will give the agent Rs. 5-3-4 on a supply of a wagon load of 500 maunds of cane. Even if the maximum rate of commission in vogue in some places, i.e., three pies per maund is allowed, the agent would get only Rs. 7-13 nearly per wagon or say Rs. 8 in round figures. If the mill pays the railway freight and say three pies per maund as commission to the agents there is no difficulty. The result of such a cut-throat agreement is that unless the agents want to give a present of about Rs. 10 per wagon from their own pocket, which cannot be presumed or conceived,

they must make it up by either (1) under weighing gross weights, or (2) over weighing empty carts, or (3) under payments. The last is very easy to manipulate, since due to the excess supply of cane the growers are always prepared to accept reduced rates."

62. (*General Questionnaire*.)—The average fibre content of cane is higher in India than in most other countries (excepting South Africa, where the Uba cane contains a very high percentage of fibre). Normally, therefore, Indian factories should have surplus bagasse. But until recently most Indian factories found bagasse insufficient for their fuel requirements and had to burn large quantities of outside fuel. This was due to the following reasons:—

- (a) Poor milling of cane, as a result of which too much moisture was left in the bagasse, which considerably lowered its calorific value.
- (b) Inefficient types of boiler furnaces and lack of proper scientific control of combustion.
- (c) Wasteful methods of using steam,—such as long and insufficiently insulated steam lines and too many and widely distributed steam consuming units.

A good deal of improvement has, however, been made recently in this respect and many factories are now able to do without outside fuel and some of them even get surplus bagasse, which is used as fuel during the off-season. With continued progress it is likely that the aggregate quantity of surplus bagasse available at sugar factories will become large enough to necessitate the adoption of suitable methods for its disposal. Certain methods for the utilization of surplus bagasse are, therefore, suggested below:—

- (1) *Use as Cattle Feed*.—Bagasse, in admixture with molasses and certain oilcakes, forms a suitable feed for cattle. Research work in this connection is being conducted at the Imperial Institute of Sugar Technology. For making feeding tests with the feeds prepared at the Institute, trial lots have been supplied to various animal nutrition centres.
- (2) *Use for making coarse paper and board*.—Experiments (financed by the Imperial Council of Agricultural Research) are being conducted at present on this aspect of the problem at the Forest Research Institute, Dehra Dun. There is little technical difficulty in making coarse grades of paper and board from bagasse, provided bagasse is available at a sufficiently low price.
- (3) *For making activated compact*.—Bagasse, with other by-products of the sugar industry, such as cane trash, press mud and molasses, can be used for making a good quality of manure by the well-known process of composting. Experiments conducted at the Imperial Institute of Sugar Technology, Cawnpore, have given promising results. The use of such manure in conjunction with scheme sponsored by sugar factories for improved cultivation of cane will be specially valuable.
- (4) *For the manufacture of alpha-cellulose*.—The nitric acid pulping process developed by Lynch and Goss, for making alpha-cellulose has given satisfactory results and is at present used in Germany, the raw material there being beechwood. In view of the fact that the possibilities of starting the Rayon industry in India are at present being seriously examined, bagasse may be found to provide the raw material required for making cellulose of the right type.
- (5) *For making activated carbon*.—Such carbons are required for decolourising oils, sugar juices, etc., and are mostly imported. Preliminary experiments made at the Imperial Institute of Sugar Technology have shown that bagasse can be used for making such carbons. Further work, which is at present in hand, is however necessary before coming to a decision regarding its commercial possibilities.

42. (*Questionnaire for Local Governments.*)—No reliable list is available of Khandsari concerns which do not come under the Factories' Act. Such concerns do not always work every year and many of them also change their location*.

A list of open pan factories coming under the Factories Act is attached. This has been prepared on the basis of information received from Chief Inspectors of Factories and other official sources. It will be observed that out of a total of 78 open pan factories, 44 are in the United Provinces.

Information regarding the production of sugar, molasses and gur by open pan concerns is given below:—

(a) *Production of Sugar.*—Statistics for sugar production by open pan concerns are not available. The Sugar Committee estimated the production of such in 1919-20 at 250,000 tons†.

The Tariff Board's estimate for 1927-28 amounted to 200,000 tons‡. The Sugar Bureau, Pusa, however, placed the estimated production at only 50,000 tons annually up to 1927-28. The figure was raised to 200,000 tons for 1928-29 as a result of the publication of the Tariff Board's estimate. The figures for total production of sugar in India hence appeared to show a discontinuous jump in 1928-29, which cannot be reconciled by the actual condition of the industry.

As a result of enquiries made from important Khandsari sugar manufacturers early in 1933, and also of calculations based on the area under sugarcane in Rohilkhand, it was considered that the Sugar Bureau's figure of 50,000 tons was an underestimate, and that a figure of 200,000 tons up to 1927-28 was a nearer approximation. The official figures published by the Sugar Bureau in the Annual Reviews up to 1927-28 were, therefore, amended in this respect.

The Khandsari industry, along with the factory industry, expanded during the early days of protection. Moreover this system of sugar making was no longer confined to Rohilkhand but spread rapidly in the Punjab and there were definite signs of its being taken up more and more in Madras, Bombay and Bengal. The production of Khandsari sugar was, therefore, estimated at 250,000 tons in 1931-32 and 275,000 tons in 1932-33.

With the rapid increase in production of vacuum pan factories in subsequent years, the open pan industry received a set back and its production declined rapidly. The production figures for the four years from 1933-34 to 1936-37 are estimated at 200,000 tons, 150,000 tons, 125,000 tons and 100,000 tons respectively.

In order to obtain some more definite figures for the production of sugar by open pan concerns, the Imperial Council of Agricultural Research addressed the Local Governments of the United Provinces and the Punjab in 1933 to undertake a census of Khandsari concerns. As a result of the enquiry thus undertaken, the following figures were reported—

	Tons.
(i) <i>The Punjab</i> —	
Production in 1932-33	9,645
Production in 1933-34	4,144
	Tons.
(ii) <i>The United Provinces</i> —	
Production in 1932-33	99,254
Production in 1933-34	86,913

* An incomplete list of 181 open pan sugar factories and Khandsari concerns in the United Provinces in 1931-32 is given on pages 143-150 of "Sugar Industry and Labour in the United Provinces" by R. D. Agarwala (Leader Press, Allahabad).

† See Report of the Sugar Committee, paragraph 278.

‡ See Report of the Tariff Board on the Sugar Industry, 1931, paragraph 36.

On checking the detailed reports received some difficulty was found in reconciling all the figures given. It was, therefore, felt that although these figures were of doubtful accuracy, they at least served to indicate that the open pan sugar industry was undergoing rapid contraction. The estimated figures mentioned previously are, therefore, considered to be approximately correct, and have been brought together in Table I below.

TABLE I.—*Estimated production of sugar by the Open Pan process.*

Year.	Production.
	Tons.
1930-31	200,000
1931-32	250,000
1932-33	275,000
1933-34	200,000
1934-35	150,000
1935-36	125,000
1936-37	100,000

(b) *Production of Molasses.*—Generally the yield of molasses by the Open Pan process is approximately equal to that of sugar, although under efficient conditions of boiling and centrifugalling it should be somewhat smaller. In the absence of any more reliable statistics, the figures given in Table I for production of sugar may also be taken as figures for estimated production of molasses.

(c) *Production of Gur.*—The official statistics relating to the sugarcane crop give the area under cane and the yield of gur only, no figures for the tonnage of cane being given. The nett production of gur in India is therefore calculated from the figures for total yield of gur given in the Final General Memorandum each year by allowing for the gur equivalent of the cane used for the following purposes:—

- (i) For sugar making in modern cane factories,
- (ii) For sugar making by the open pan process,
- (iii) For sets,
- (iv) For chewing.

For the purpose of this calculation, the yield of gur is taken as 10 per cent. on the weight of cane. Table II shows the production of gur (including the gur utilised for sugar making in modern refineries, from 1930-31 to 1936-37).

TABLE II.—*Calculated net production of Gur in India.*

Year.	Gur used in refineries.	Total production of gur including that used in refineries.
	Tons.	Tons.
1930-31	37,000	2,282,000
1931-32	57,700	2,829,700
1932-33	151,269	3,396,000
1933-34	107,263	3,584,000
1934-35	67,613	3,760,000
1935-36	87,472	4,192,000
1936-37	57,000	4,502,000

43. (*Questionnaire for Local Governments.*)—There are various systems in use for making sugar by the open pan process and as the cost of manufacture depends on the particular system adopted, these are first described below—

(i) *Bel-Khanchi Khandsaris.*—These use no machinery. Cane-growers crush the cane in animal power crushers (which are generally taken on hire).

and sell the juice (not the cane) to the Khandsari who converts it into rab in direct-fired open pans. The rab is placed in bags and molasses is squeezed out by applying pressure. The brown sugar thus obtained is then treated with moistened weeds and after it has become almost white, it is dried in the sun.

The Khanchi system of separating sugar from rab is now almost obsolete, having been replaced by the use of centrifugal machines. It is, therefore, not necessary to give cost of production data for this system.

(ii) *Bel-Centrifugal Khandsaris*.—The process adopted is exactly similar to that described for the Bel-Khanchi system excepting that centrifugal machines (which may be hand- or power-driven) are used for separating sugar from rab. In a modification of this process, the rab boiler, working in villages, sells his rab to owners of centrifugal factories, generally located in towns. This system is the most common.

(iii) *Open Pan Factories*.—These represent a further stage in the industrialisation of small scale sugar manufacture. Such concerns generally have cane crushers driven by oil or steam engines or by electric motors. Rab is boiled in open pans as before and power-driven centrifugal machines are used for separating sugar from rab.

Factories of this type differ from the modern vacuum pan factories in point of size and also in respect of the much simpler machinery and process employed. But most of these concerns are large enough to be classified as factories under the Indian Factories' Act.

With the imposition of excise duty on sugar in 1934 and its enhancement in 1937, there has been a tendency to split up the above process into two sections, the first one being confined to crushing the cane in power crushers and converting it into rab in open pans and the second one (generally located at a different place) separating sugar from rab by means of power-driven centrifugal machines. The crushing and boiling section produces rab which contains less than 90 per cent. sucrose and is, therefore, not liable to excise duty. The second operation of centrifugalling generally does not require more than 19 men and is exempt from Excise Duty on that account.

Information relating to cost of production by the various processes referred to above is given below:—

(a) *Cost of production with juice as raw material*.—According to information supplied by an important Khandsari of Bilari (District Moradabad) in June, 1937, the price of juice in that locality during the season 1936-37 was Rs. 18 to Rs. 20 (or an average of Rs. 19) per Karda.* This means that the price of cane plus crushing charges amounted to between 2.88 and 3.2 annas per standard maund.

The recovery of sugar obtained in this area is about 6 per cent., being higher than the usual figure of 5 per cent. elsewhere owing to the better quality of cane. The manufacturing expenses (including centrifugalling charges) amount to Rs. 7 to Rs. 10 per karda of juice, depending on freight. This does not include depreciation, interest and marketing charges, for which an allowance of about 4 annas per maund of sugar will be necessary. No deduction has also been made for return from molasses, which generally fetches 2 to 4 annas per maund. The yield of molasses, with a 6 per cent. recovery of sugar, will be about 5 per cent. on cane. There will be a similar return from molasses if it is mixed with juice and converted into gur, which is the practice followed in certain areas.

* 1 Karda=50 local maunds=62½ standard maunds. It is generally assumed that a Karda of juice is obtained from 100 standard maunds of cane. For average bullock mills (which give an extraction of juice of 55 to 60 per cent. on cane) this is a slight overestimate, but has been accepted for the present calculation.

The cost of production of sugar from juice, corresponding to recoveries of 5 and 6 per cent. on the original cane, may, therefore, be calculated as follows on the basis of the data given above:—

TABLE I.—*Analysis of cost of production.*

Particulars.	Cost corresponding to Recovery of sugar per cent. cane.	
	5 per cent.	6 per cent.
	Rs. a. p.	Rs. a. p.
(1) Cost of juice per maund sugar (at Rs. 10 per Karda)	3 12 9	3 2 8
(2) Manufacturing expenses per maund Sugar (at Rs. 8-8-0 per Karda juice)	1 11 3	1 6 8
(3) Depreciation, interest and marketing charges.	0 4 0	0 4 0
Total	5 12 0	4 13 4
Deduct—Return from molasses per maund of sugar (at 5 per cent. recovery of molasses on cane, and 3 annas per maund price of molasses)	0 3 0	0 2 6
Net cost of production of one maund Khandsari sugar	5 9 0	4 10 10

The cost of production of Khandsari sugar during the last season may therefore be said to vary between Rs. 4-12 and Rs. 5-8 per maund, when juice is used as raw material. It should be observed that no provision has been made in the above calculations for excise duty.

(b) *Cost of production with cane as raw material.*—Detailed analyses of cost of production of sugar directly from cane were worked out on the basis of trials held at Bilari in 1931 and at Shahjahanpur in 1933.* The figures are summarised in Tables II and III below. The prices of cane and molasses have been altered to 3 annas per maund for each.

The figures in these tables are based on the following average recovery figures which were obtained during the trials—

	Bilari.	Shahjahanpur.
Recovery of sugar per cent. cane	6.47	7.18
Recovery of molasses per cent. cane	4.70	4.77

Owing to the high recovery of sugar obtained in these trials, the figures in Tables II and III are low and cannot be regarded as normal. On the other hand some of the items, such as cost of cane crushing and centrifugalling are higher than what they would be in a commercial concern.

* "The Open Pan system of White Sugar Manufacture" by R. C. Srivastava, pages 61-63; also "Open Pan Boiling" by R. L. Sethi, pages 53-54.

TABLE II.—Analysis of cost of production of Sugar (Bilari Experiments, 1931).

Items of Cost.	Amount. Rs. A. P.
A. Expenses—	
(1) Supervising staff	0 2 10
(2) Cane crushing	0 13 11
(3) Juice boiling	0 8 3
(4) Molasses boiling	0 2 7
(5) Potting rab	0 4 9
(6) Centrifugalling	0 8 4
(7) Drying, weighing, etc., of sugar	0 1 6
(8) Depreciation of machinery	0 4 5
(9) Depreciation of boiling plant	0 1 7
(10) Miscellaneous	0 0 11
Total	3 1 1
B. Raw material—	
Cost of cane at As. 3 per maund	2 14 4
Total	5 15 5
Deduct—Price of molasses at As. 3 per maund	0 2 3
Net cost of 1 maund of sugar	5 13 2

TABLE III.—Analysis of cost of production of Sugar (Shahjahanpur Experiments, 1933).

Items.	Amount. Rs. A. P.
A. Expenses—	
(1) Supervising staff	0 3 3
(2) Cane crushing	0 5 2
(3) Juice boiling	0 3 3
(4) Molasses boiling	0 2 5
(5) Potting and storing rab	0 2 7
(6) Centrifugalling	0 10 1
(7) Drying of sugar	0 1 10
(8) Weighing and marketing sugar	0 0 5
(9) Depreciation of machinery	0 7 2
(10) Depreciation of pans	0 0 6
(11) Miscellaneous	0 1 6
Total	2 6 2
B. Raw material—	
Cost of cane at As. 3 per maund	2 9 10
Total	5 0 0
Deduct—Price of molasses at As. 3 per maund	0 2 0
Net cost of 1 maund of sugar	4 14 0

(8) Letter, dated the 25th August, 1937, from the Imperial Council of Agricultural Research, Simla.

Subject :—SUGAR QUESTIONNAIRE.

In continuation of this Department letter, dated the 18th August, 1937, I am directed to forward herewith 6 copies each of the replies furnished by the Director, Imperial Institute of Sugar Technology, to question 21 of the General Questionnaire and Question 41 of the Questionnaire for Provincial Governments.

Enclosure.

21. (*General Questionnaire.*)—The old indigenous varieties of sugarcane have mostly gone out of cultivation now, in the United Provinces and Bihar and are rapidly disappearing from other provinces. Their place has been taken by improved varieties, most of which were developed at Coimbatore. The improved canes benefit the grower on account of the high tonnage per acre which they give, whilst their higher sucrose content and juice purity make them a much better raw material than the old varieties for the sugar manufacturer and gur maker alike. They have also the property of ratooning well.

But in order that the improved varieties of cane may give all these desirable results, it is essential that they are grown under conditions of intensive cultivation,—that is, they should be adequately manured and irrigated and the cultivation in general should be carried out on proper lines. The most important difference between the new and old varieties, in fact, consists in the new varieties being much more responsive to intensive cultivation, and where such cultivation is not followed most of the advantage obtainable from the new varieties is lost.

In the Presidencies of Bombay and Madras, in the States of Mysore and Hyderabad and in such other parts of the country where cane cultivation is in the hands of sugar factories or large and well-to-do growers, intensive cultivation is adopted and heavy crops of good quality cane are obtained. But the case is different in the United Provinces and Bihar where cane is mostly cultivated by small growers, whose resources in the form of money as well as cattle are too small to permit of intensive cultivation. For the same reason a steadily increasing area is being allowed to go under ratoon crop, which needs good cultivation much more than plant crop for giving satisfactory yields. As a result, the average cane crop in Northern India is poorer and the cost of cultivation higher than what it should be with the high yielding varieties which have been introduced.

It is difficult to improve matters in this respect under the existing system of land tenure which permits unlimited fragmentation of holdings. But some benefit may result from joint farming on a co-operative basis, though the practical difficulties in the organisation and running of such farms are not likely to be small.

In regard to the transport and delivery of sugarcane to factories, the only means at present available to the grower is the village bullock cart which he owns or hires. This is a cheap method of transport, but owing to the small capacity and slow speed of these carts, the area of supply adjoining a factory or purchasing centre is necessarily restricted. Where suitable roads are available, the recently introduced rubber-tyred carts with their larger capacity for the same tractive effort, should be of use. But the only effective method of dealing with this matter is for sugar factories to have their own light railways. Every possible assistance should be given to the factories in this connection. This may take the form of permission to use land adjoining roads and of loans and subsidies for the purchase of rails and rolling stock.

41. (*Questionnaire for Local Governments.*)—Research and experimental work for improvement in the methods of manufacture of gur or jaggery has been directed towards the following aspects of the process:—

- (a) Improvement of cane crushers of the type used for gur making,
- (b) Improvements in the method of treating juice,
- (c) Improvements in pans and furnaces used for juice boiling.

(a) *Improvement of Cane Crushers.*—The Imperial Council of Agricultural Research gave grants of Rs. 8,000 each to several cane-growing provinces for experiments on improved types of power driven cane crushers suitable for the Khandsari industry. The grant given to the United Provinces was placed at the disposal of the Sugar Technologist by the Director of Agriculture. Two crushers (called the Imperial Council of Agricultural Research crushers I and II) were accordingly designed, manufactured and tested. The crushers are of simple but improved design and have given satisfactory results. They are now being manufactured for sale to the public by Messrs. Kirloskar Brothers of Satara (Bombay).

As bullock power cane crushers are mostly used for gur making, an improved crusher fitted with ball-bearings has been designed and made. The crusher is designed in such a way that it is much lighter to work and the rollers work at a higher speed. The effect of these improvements is that a pair of bullocks can crush a larger quantity of cane and give a better extraction than with crushers of the usual design. Preliminary trials have already shown improvement in both these respects.

The following crushers were also tested for their capacity, efficiency and power consumption at the Research Station, Bilari, during the last season:—

- (1) Imperial Council of Agricultural Research, No. I.
- (2) Imperial Council of Agricultural Research, No. II (Kirloskar).
- (3) Vasant (Kirloskar).
- (4) Phoenix (Jessop).

(b) *Improvement in the method of treating juice.*—This relates to the removal of impurities from cane juice by mechanical and chemical means.

The following work has been done or is in hand:—

- (i) Designing juice straining baskets (using gravel as filtering medium) for filtration of juice in boiling pans.
- (ii) Automatic juice strainer and pump.
- (iii) Use of chemical re-agents (such as lime sucrate) for clarification of cane juice.
- (iv) Manufacture and use of decolourising carbons (from paddy husk, bagasse, "dhak" leaves and coconut shell) for preparing light coloured jaggery.
- (v) Gur making with neutralised juice (using lime water) for use in refineries.
- (vi) Preparation of neutralised cane syrup for use as a raw material in refineries.

(c) *Improvement in pans and furnaces for juice boiling.*—As a result of the experiments conducted at Bilari in 1931, an improved type of Rohilkhand Bel was designed.* This is intended for making either rab or gur. It has been run commercially for three seasons with satisfactory results.

The following Bels (i.e., sets of juice boiling pans), have been tested at Bilari during the last season and improvements are being made as a result of these tests:—

- (i) Poona bel (for gur making).
- (ii) Cream jaggery bel (for gur making using activated carbon).

* See "The Open Pan System of White Sugar Manufacture" by R. C. Srivastava, pp. 114-115.

(iii) Bihar Single pan bel (for gur or rab making).

(iv) Jullundur bel (for gur or rab making).

Besides the research and experimental work described above, a detailed scheme for the introduction of improved methods in the gur industry of the United Provinces was prepared this year for the Local Government. Work on this scheme has been already taken in hand.

(9) *Letter, dated the 22nd June, 1937, from the Imperial Council of Agricultural Research, Simla.*

I am desired to enclose three statements showing (i) the cost of manufacture of gur per maund, (ii) the price of gur per maund and rate of family wages, etc., and (iii) the cost of manufacture and sale price of gur, for three districts of the Punjab and the United Provinces, together with a copy of a note from the Director, Imperial Institute of Sugar Technology, dated the 10th June, 1937. A copy of the report on the Khandsari enquiries in the United Provinces and the Punjab (1933-36) is also enclosed.



सत्यमेव जयते

Cost of Manufacture of Gur per maund in Lyallpur.

Year.	Village.	Per acre.					Cost per maund.
		Cost of human labour.	Cost of bullock labour.	Interest and depreciation on cane-crushers, pans, etc.	Total cost per acre.	Yield per acre.	
1934-35	Chak 67 G. B.— (Average for 8 holdings) .	Rs. a. p. 11 1 2	Rs. a. p. 14 13 6	Rs. a. p. 5 10 1	Rs. a. p. 31 8 9	Mds. Srs. 24 17	Rs. a. p. 1 4 8
	Chak 327 J. B.— (Average for 7 holdings) .	12 13 10	22 1 9	8 15 6	43 15 1	32 8	1 5 10
	Chak 364 J. B.— (Average for 7 holdings) .	14 6 5	13 13 3	1 15 4	30 3 0	33 34	0 14 2
	Chak 248 R. B.— (Average for 8 holdings) .	8 6 0	7 11 2	5 11 4	21 12 6	20 29	1 0 10
	Chak 197 R. B.— (Average for 7 holdings) .	9 1 4	10 13 11	4 8 0	24 7 3	17 27	1 6 2
	Chak 448— (Average for 8 holdings) .	9 9 8	8 13 6	13 12 9	32 3 11	17 1	1 14 4 = 1 5 0
	Chak 67 G. B.— (Average for 8 holdings) .	11 4 0	14 5 8	5 9 3	31 2 11	24 29	1 4 4
	Chak 327 J. B.— (Average for 7 holdings) .	7 1 3	17 15 8	11 7 11	36 8 10	18 18	1 15 9
1935-36	Chak 364 J. B.— (Average for 8 holdings) .	11 8 3	11 11 2	1 11 4	24 14 9	29 13	0 13 7
	Chak 248 R. B.— (Average for 8 holdings) .	10 1 10	8 1 8	5 9 5	23 12 11	22 29	1 0 8
	Chak 197 R. B.— (Average for 6 holdings) .	10 8 8	10 13 10	3 7 10	24 14 4	15 21	1 9 8
	Chak 448— (Average for 7 holdings) .	11 8 9	11 12 6	9 13 11	33 3 2	24 2	1 6 0 = 1 5 8
	Average for the District in 1934-35						
	Average for the District in 1935-36						

Cost of Manufacture of Gur per maund in Jullundur.

Year.	Village.	Per acre.					Yield per acre.	Cost per maund.
		Cost of human labour.	Cost of bullock labour.	Interest and depreciation on cane- crushers, pans, etc.	Total cost per acre.			
1934-35	Hussainpur— (Average for 7 holdings) .	Rs. a. p. 21 12 9	Rs. a. p. 19 3 8	Rs. a. p. 8 9 1	Rs. a. p. 49 9 6	Mds. Srs. 24 39	Rs. a. p. 1 15 9	
	Jabboul— (Average for 8 holdings) .	13 6 8	18 8 1	5 6 5	37 5 2	39 16	0 15 8	
	Chuheki— (Average for 8 holdings) .	23 15 7	23 3 2	3 15 1	51 1 10	46 34	1 1 6	
	Sargonda— (Average for 8 holdings) .	14 12 7	20 12 3	3 13 1	39 5 11	44 13	0 14 2	
	Kala Bakra— (Average for 6 holdings) .	8 14 4	6 0 5	6 8 8	21 7 5	13 28	1 9 3	
	Mehli— (Average for 8 holdings) .	17 15 1	23 3 0	4 11 2	45 13 3	33 35	1 5 9 = 1 5 1	
			Average for the District in 1934-35					
1935-36	Hussainpur— (Average for 8 holdings) .	18 14 6	15 1 3	8 10 5	42 10 2	30 18	1 6 8	
	Jabboul— (Average for 8 holdings) .	16 1 4	17 12 6	4 11 6	38 9 4	50 38	0 12 1	
	Chuheki— (Average for 8 holdings) .	25 5 1	24 1 3	3 12 8	53 3 0	43 2	1 0 5	
	Sargonda— (Average for 8 holdings) .	15 11 10	23 3 7	3 10 7	42 10 0	46 18	0 14 8	
	Kala Bakra— (Average for 7 holdings) .	8 13 1	7 10 1	5 7 3	21 14 5	19 7	1 2 4	
	Mehli— (Average for 8 holdings) .	11 2 3	16 5 4	2 9 8	30 1 3	38 0	0 12 8 = 1 0 1	
			Average for the District in 1935-36					

Cost of Manufacture of Gur per maund in Gurdaspur.

Year.	Village.	Per acre.					
		Cost of human labour.	Cost of bullock labour.	Interest and depreciation on cane-crushers, pans, etc.	Total cost per acre.	Yield per acre.	Cost per maund.
1934-35	Japolda— (Average for 7 holdings) .	Rs. a. p. 14 5 2	Rs. a. p. 16 2 1	Rs. a. p. 14 8 11	Rs. a. p. 45 0 2	Mds. Srs. 17 30	Rs. a. p. 2 8 6
	Sarmon Lahri— (Average for 6 holdings) .	3 7 6	2 0 7	6 4 4	11 12 5	5 15	2 3 2
	Khojepur— (Average for 8 holdings) .	11 0 5	23 1 8	4 9 10	38 11 11	18 30	2 1 0
	Bidhipur— (Average for 8 holdings) .	8 2 6	9 9 8	2 5 2	20 1 4	12 37	1 8 10
	Kakhuw— (Average for 8 holdings) .	19 10 8	22 2 8	5 8 9	47 6 1	25 25	1 13 8
	Sarwali— (Average for 8 holdings) .	14 14 7	16 0 5	5 15 9	36 14 9	20 24	1 12 8
			Average for the District in 1934-35				-2 0 0
	Japolda— (Average for 8 holdings) .	10 9 11	17 5 1	10 3 11	38 2 11	15 30	2 6 10
	Sarmon Lahri— (Average for 6 holdings) .	4 4 10	2 15 9	4 14 4	12 2 11	7 27	1 9 4
	Khojepur— (Average for 8 holdings) .	8 12 10	11 14 7	4 1 1	24 12 6	13 21	1 13 4
1935-36	Bidhipur— (Average for 8 holdings) .	12 12 6	12 15 8	3 8 11	29 5 1	18 11	1 9 8
	Kakhuw— (Average for 7 holdings) .	11 8 11	9 15 9	4 4 11	25 13 7	14 37	1 11 9
	Sarwali— (Average for 8 holdings) .	14 2 9	9 15 2	5 6 8	29 8 7	26 0	1 2 2
			Average for the District in 1935-36				-1 14 3

Cost of Manufacture of Gur per maund in Meerut (Ratoon Crop).

Year.	Village.	Actual cost of Gur Making.				Actual Yield.	Cost per maund.
		Cost of human labour.	Cost of bullock labour.	Interest and depreciation on cane-crushers, pans, etc.	Total cost per acre.		
1934-35	Bhaura— (Total for 3 holdings)	Rs. a. p. 16 15 3	Rs. a. p. 23 6 5	Rs. a. p. ..	Rs. a. p. 40 5 8	Mds. Srs. 44 38	Rs. a. p. 0 14 3
	Jalalabad— (Total for 5 holdings)	6 0 9	6 10 11	0 12 9	13 8 5	34 37	0 5 2
	Parsaul— (Total for 6 holdings)	60 14 0	67 3 8	0 8 2	128 9 10	152 12	0 13 6
	Wair— (Total for 5 holdings)	26 13 0	31 0 0	..	57 13 0	82 31	0 11 2
	Dalegarh— (Total for 1 holding)	11 10 0	10 5 7	..	21 15 7	32 0	0 11 0
	Baksar— (Total for 2 holdings)	10 8 6	10 7 4	0 7 7	21 7 5	27 24	0 12 4 = 0 11 5
			<i>Average for the District in 1934-35</i>				
	Bhaura— (Total for 5 holdings)	14 7 0	13 4 5	..	27 11 5	61 1	0 7 3
	Jalalabad— (Total for 5 holdings)	49 9 3	59 8 10	0 10 9	109 12 10	189 6	0 9 4
	Parsaul— (Total for 7 holdings)	69 13 0	76 3 10	0 11 5	146 12 3	243 17	0 9 8
1935-36	Wair— (Total for 2 holdings)	4 14 3	9 13 3	..	14 11 6	18 36	0 12 5
	Dalegarh— (Total for 2 holdings)	22 11 6	19 11 4	..	42 6 10	51 35	0 13 1
	Baksar— (Total for 4 holdings)	7 6 3	14 15 5	..	22 5 8	29 4	0 12 3 = 0 10 8
			<i>Average for the District in 1935-36</i>				

Cost of Manufacture of Gur per maund in Meerut (New Crop).

Year.	Village.	Actual cost of Gur Making.				Actual Yield.	Cost per maund.
		Cost of human labour.	Cost of bullock labour.	Interest and depreciation on cane-crushers, pans, etc.	Total cost.		
1934-35	Bhaura— (Total for 6 holdings)	Rs. a. p. 4 1 9	Rs. a. p. 2 14 2	Rs. a. p. ..	Rs. a. p. 7 15 11	Mds. Srs. 9 15	Rs. a. p. 0 13 9
	Jalalabad— (Total for 4 holdings)	16 10 3	20 15 1	0 13 0	38 6 4	46 20	0 13 3
	Parasul— (Total for 6 holdings)	33 15 3	43 14 4	..	77 13 7	57 18	1 5 8
	Wair— (Total for 1 holding)	2 8 6	3 3 3	..	5 11 9	6 6	0 14 11
	Dalelgarh— (Total for 1 holding)	1 4 3	0 12 0	..	2 0 3	3 4	0 10 5
	Baksar— (Total for 1 holding)	1 6 9	2 13 0	..	4 3 9	6 0	0 11 4
			<i>Average for the District in 1934-35</i>				= 0 14 3
				..	25 7 6	49 35	0 8 2
1935-36	Bhaura— (Total for 6 holdings)	13 7 3	12 0 3	..	25 7 6	49 35	0 8 2
	Jalalabad— (Total for 4 holdings)	9 2 9	8 12 3	0 15 6	18 14 6	28 3	0 10 8
	Parasul— (Total for 5 holdings)	33 14 3	43 3 1	0 3 10	77 5 2	122 28	0 10 1
	Wair— (Total for 3 holdings)	13 13 6	22 7 9	..	36 4 11	43 0	0 13 6
	Dalelgarh— (Total for 4 holdings)	64 13 0	54 12 3	0 2 11	119 12 2	197 37	0 9 8
	
				<i>Average for the District in 1935-36</i>			= 0 10 5
	Baksar	..	..	..	..	..	..

Cost of Manufacture of Gur per maund in Rohilkhand.

Year.	Village.	Actual cost of Gur Making.				Actual yield.	Cost per maund.
		Cost of human labour.	Cost of bullock labour.	Interest and depreciation on cane-crushers, pans, etc.	Total cost.		
		Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Mds. Srs.	Rs. a. p.
1934-35	Sarai Sundarpur— (Total for 1 holdings)	4 14 9	8 6 9	..	13 5 6	11 35	1 1 11
	Gurair— (Total for 2 holdings)	31 2 9	30 1 7	..	61 4 4	94 17	0 10 5
	Jaitpore Patti— (Total for 6 holdings)	130 1 9	145 7 4	..	275 9 1	458 2	0 9 8
	Dharmongadpur Gopalpur Abhyrampur	..	..	..	..	..	..
					Average for the District in 1934-35		= 0 12 8
1935-36	Sarai Sundarpur— (Total for 2 holdings)	11 5 11	15 1 7	..	26 7 6	87 13	0 4 10
	Jaitpore Patti— (Total for 6 holdings)	70 12 0	38 8 2	..	109 4 2	247 34	0 7 1
	Abhyrampur— (Total for 1 holding)	14 14 2	4 15 8	..	19 13 10	60 17	0 5 3
	Dharmongadpur Gopalpur Gurair	..	..	..	..	..	..
					Average for the District in 1935-36		= 0 5 9

Price of Gur per maund and rate of Family wages together with rate of hire or interest and depreciation on cane-crusher and pans.


Year.	District and village.	Price per maund of Gur.	Cost of bullock labour.	Pan and cane- crusher charges.	Family wage rate.
The Punjab.					
GURDASPUR.					
1934-35	Japolota . . .	Rs. a. p. 4 0 3	Highest . . . 1 10 8	Rate of hire per maund of Gur— 3 as. Rate of interest—8 per cent. Rate of Deprecia- tion— 1. Mill—4½ to 5 per cent. 2. Pan—20 to 25 per cent.	<i>Man days—</i> Highest . . . 0 4 6 Lowest . . . 0 3 0 Average . . . 0 3 7
	Sarmonlahri . . .	6 2 7	Lowest . . . 0 5 1		
	Khojepore . . .	4 4 7	Average . . . 1 0 1		
	Bidhipore . . .	4 2 6			<i>Woman days—</i> Highest . . . 0 3 0 Lowest . . . 0 2 0 Average . . . 0 2 5
	Khalwan . . .	4 1 10			
	Sarwali . . .	4 9 8			
	Total . . .	27 5 5			<i>Child days—</i> Highest . . . 0 2 3 Lowest . . . 0 1 6 Average . . . 0 1 9
	Average . . .	4 8 11			
	Japolota . . .	4 1 3	Highest . . . 1 7 0		
	Sarmonlahri . . .	3 14 4	Lowest . . . 0 5 0		
Khojepore . . .	4 0 6	Average . . . 0 13 6			
1935-36	Japolota . . .	4 1 3	Highest . . . 1 7 0	Rate of hire per maund of Gur—3 as. Rate of interest—8 per cent.	<i>Man days—</i> Highest . . . 0 4 6 Lowest . . . 0 3 0 Average . . . 0 3 7
	Sarmonlahri . . .	3 14 4	Lowest . . . 0 5 0		
	Khojepore . . .	4 0 6	Average . . . 0 13 6		

1934-35	Bidhipore	3 10 3	Rate of depreciation— 1. Mill—4½ to 5½ per cent. 2. Pan—10 to 33 per cent.	<i>Woman days—</i> Highest 0 3 0 Lowest 0 2 0 Average 0 2 5		
	Khalwan	4 1 1		<i>Child days—</i> Highest 0 2 3 Lowest 0 1 6 Average 0 1 9		
	Sarwali	4 7 2				
	Total	24 2 7				
	Average	4 0 5				
JULLUNDER.						
1934-35	Hussainpore	5 2 3	Rate of hire per maund of Gur—3 as. Rate of interest—8 per cent.	<i>Man days—</i> Highest 0 5 0 Lowest 0 3 6 Average 0 4 4		
	Jabbowal	4 14 0				
	Chuheki	3 14 11		<i>Woman days—</i> Highest 0 3 4 Lowest 0 2 4 Average 0 2 11		
	Sargondi	5 4 3		<i>Child days—</i> Highest 0 2 6 Lowest 0 1 9 Average 0 2 2		
	Kala Bakra	4 8 0				
	Mehli	4 11 3	Rate of depreciation— 1. Mill—10 per cent. 2. Pan—20 per cent.			
	Total	28 10 8				
	Average	4 12 5				

Price of Gur per maund and rate of Family wages together with rate of hire or interest and depreciation on cane-crusher and pans—contd.

Year.	District and village.	Price per maund of Gur.	Cost of bullock labour.	Pan and one-crusher charges.	Family wage rate.
<i>The Punjab—contd.</i>					
JULLUNDER—contd.					
1935-36	Hussainpoza . . .	Rs. a. p. 4 1 9	Rs. a. p. 1 11 0	Rate of hire per maund of Gur—3 as.	Man days— Highest . . . 0 5 0 Lowest . . . 0 3 6 Average . . . 0 4 4
	Jabbawal . . .	4 6 9	0 9 2	Rate of interest—8 per cent.	
	Chuheki . . .	3 15 4	1 1 3	Rate of depreciation— 1. Mill—10 per cent. 2. Pan—20 per cent.	
	Sargondi . . .	4 9 9			Women days— Highest . . . 0 3 4 Lowest . . . 0 2 4 Average . . . 0 2 11
	Kala Bakra . . .	4 5 5			
	Mehli . . .	4 9 4			
	Total . . .	28 0 4			Child days— Highest . . . 0 2 6 Lowest . . . 0 1 9 Average . . . 0 2 2
	Average . . .	4 5 5			

Price of Gur per maund and rate of Family wages together with rate of hire or interest and depreciation on cane-crusher and pans—contd.

Year.	District and village.	Price per maund of Gur.	Cost of bullock labour.	Pan and cane-crusher charges.	Family wage rate.
1934-35	MEERUT.		United Provinces. (Katoon Crop.) 	Rate of hire 2 as. to 2 as. 9 p. per maund of Gur. Rs. a. p. Highest . . . 1 9 8 Lowest . . . 0 8 4 Average . . . 0 14 6	Rs. a. p. Highest . . . 0 3 2 Lowest . . . 0 3 2 Average . . . 0 3 2 Man days— Highest . . . Lowest . . . Average . . . Woman days— Highest . . . 0 2 0 Lowest . . . 0 2 0 Average . . . 0 2 0 Child days— Highest . . . 0 1 6 Lowest . . . 0 1 6 Average . . . 0 1 6
	Bhaunra . . .	Rs. a. p. 3 5 0			
	Jalalabad . . .	4 4 4			
	Parsaul . . .	3 15 1			
	Wair . . .	3 7 6			
	Dalelghar . . .	3 8 6			
	Baksar . . .	4 14 10			
	Total . . .	23 7 3			
	Average . . .	3 14 6			

1935-36		3	2	2	Highest	. 1	11	1	Rate of hire—2 as. to 4 as. 1 p. per maund of Gur.			} Same as in 1934-35.
Bhaunra	.	.	.	.	Highest	.	.	.	.	.
Jalalabad	.	.	.	.	Lowest	.	.	.	.	.
Parsaul	.	.	.	.	Average	.	.	.	.	.
Wair	.	.	.	.		.	.	.	.	.
Daleighar	.	.	.	.		.	.	.	.	.
Baksar	.	.	.	.		.	.	.	.	.
Total	.	19	6	6								
Average	.	3	3	9								
MEERUT.												
1934-35	Bhaunra	.	.	.	(New Crop).	.	.	.	.	.
	Jalalabad	.	.	.	Highest	.	.	.	.	.
	Parsaul	.	.	.	Lowest	.	.	.	.	.
	Wair	.	.	.	Average	.	.	.	.	.
	Daleighar	.	.	.		.	.	.	.	.
	Baksar	.	.	.		.	.	.	.	.
	Total	.	23	7								
	Average	.	3	14								
Man days—												
	Highest	.	.	.		.	.	.	.	.
	Lowest	.	.	.		.	.	.	.	.
	Average	.	.	.		.	.	.	.	.
Woman days—												
	Highest	.	.	.		.	.	.	.	.
	Lowest	.	.	.		.	.	.	.	.
	Average	.	.	.		.	.	.	.	.
Child days—												
	Highest	.	.	.		.	.	.	.	.
	Lowest	.	.	.		.	.	.	.	.
	Average	.	.	.		.	.	.	.	.

Price of Gur per maund and rate of Family wages together with rate of hire or interest and depreciation on cane-crusher and pans—concl'd.

Year.	District and village.	Price per maund of gur.	Cost of bullock labour.	Pan and cane-crusher charges.	Family wage rate.
			<i>United Provinces—contd.</i> (Ratoon Crop)		
1935-36	Bhaunra . . .	Rs. a. p. 3 0 8	Highest . . . 1 11 1 Rs. a. p.	Rate of hire—1 a. 9 p. to 4 as. per maund of Gur.	Rs. a. p. Same as in 1934-35.
	Jalalabad . . .	3 7 8			
	Parsaul . . .	2 14 5			
	Wair . . .	2 7 0	Lowest . . . 0 7 0		
	Dalelghar . . .	2 15 4	Average . . . 0 13 2		
	Baksar . . .	..		
	Total . . .	14 13 1			
	Average	2 15 6			
1934-35	GORAKHPORE.				
	Dhara Bazurg . . .	3 14 1	Highest . . . 1 5 9	Rate of hire per maund of Gur— 1 a. 10 p. to 2 as.	Man days— Highest . . . 0 2 3 Lowest . . . 0 2 3 Average . . . 0 2 3
	Shyam Dewra . . .	4 2 11	Lowest . . . 0 6 10	Rate of interest— 8 per cent.	Woman days— Highest . . . 0 2 0 Lowest . . . 0 2 0 Average . . . 0 2 0
	Deokuan . . .	4 6 1		Rate of Deprecia- tion— 1. Mill—10 to 20 per cent. 2. Pan—14 to 33 per cent.	Child days— Highest . . . 0 1 6 Lowest . . . 0 1 6 Average . . . 0 1 6
	Total . . .	12 7 1			
	Average . . .	4 2 4			

1935-36	Dhara Bazurg	3 4 0	Highest	. 1 12 1	Rate of hire per maund of Gur—2 as. 1 p. to 3 as. 11 p.	Same as in 1934-35.
	Shyam Dewra	3 3 0	Lowest	. 0 3 0	Rate of interest— 8 per cent.	
	Deokuan	3 4 0	Average	. 0 10 6	Rate of Deprecia- tion— 1. Mill—5.9 to 12.5 per cent. 2. Pan—11 to 18.75 per cent.	
	Total	9 11 0				
	Average	3 3 8				
ROHILKHAND.						
1934-35	Sarai-Sundarpore	4 0 0	Highest	. 1 1 9	Rate of hire—2 as. to 2 as. 7 p. per maund of Gur.	Man days— Highest . . . 0 4 0 Lowest . . . 0 3 6 Average . . . 0 3 9
	Gurair	4 0 0	Lowest	. 0 5 8	Rate of interest— Rate of Deprecia- tion—	
	Jaitpore	4 2 8	Average	. 0 11 10	1. Mill	
	Patti	4 2 8			2. Pan } Not owned.	
	Total	12 2 8				Woman days— Highest . . . 0 2 6 Lowest . . . 0 2 0 Average . . . 0 2 3
	Average	4 0 10				Child days— Highest . . . 0 2 0 Lowest . . . 0 1 6 Average . . . 0 1 9
Same as in 1934-35.						
1935-36	Sarai-Sundarpore	3 0 0	Highest	. 0 12 0	Rate of hire per maund—3 as. to 5 as.	
	Abhyrajpore	3 0 0	Lowest	. 0 4 3		
	Jaitpore	3 7 8	Average	. 0 7 2		
	Patti	3 7 8				
	Total	9 7 8				
	Average	3 2 6				

Statement showing the cost of manufacture and sale price of Gur during the years 1934-35 and 1935-36.

Province and District.	1934-35.			1935-36.		
	* Cost of manufacture of Gur per maund.	Price per maund.	Gross income.	Cost of manufacture of Gur per maund.	Price per maund.	Gross income.
	1	2	3	4	5	6
<i>Punjab.</i>	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
Lyalpur	1 5 0	4 13 2	3 8 2	1 5 8	4 6 5	3 0 9
Jullundur	1 5 1	4 12 5	3 7 4	1 0 1	4 5 5	3 5 4
Gurdaspur	2 0 0	4 8 11	2 8 11	1 14 3	4 0 5	2 2 2
<i>United Provinces.</i>						
Meerut Division—						
(<i>Ratoon Crop.</i>)						
(Average of 22-25 holdings)	0 11 5	3 14 6	3 3 1	0 10 8	3 3 9	2 9 1
(<i>New Crop.</i>)						
(Average of 19-22 holdings)	0 14 3	3 14 7	3 0 4	0 10 5	2 15 5	2 5 0
Gorakhpur (Average of 22 holdings)	0 15 7	4 2 4	3 2 9	1 7 0	3 3 8	1 12 8
Rohilkhand Division (Average of 9 holdings)	0 12 8	4 0 10	3 4 2	0 5 9	3 2 6	2 12 9

* This includes the cost of manufacture of Gur after the cane has been harvested.

NOTE FROM THE DIRECTOR, IMPERIAL INSTITUTE OF SUGAR TECHNOLOGY.

No data are available in this office for checking the figures for cost of production of gur given in the statements prepared by Mr. Kapur. The figures for price per maund of gur are checked with the records available in this office and are found to be in close agreement. It may be mentioned, however, that the price of gur has dropped considerably during the last six months. Gur is being sold in Meerut and other markets at a low price of Rs. 2-4 per maund daily.

At this low price the return which the cultivator gets per maund of cane converted into gur is much less than that what is estimated by Mr. Kapoor. Statements giving the prices of gur in different markets brought up-to-date have been sent with Imperial Council of Agricultural Research, letter No. F. 32-(3)/37-A, dated the 21st June, 1937.

Certain estimates of the cost of manufacturing a maund of gur have been given in the appendices to my note on the "Development of Indigenous methods of sugar and gur manufacture in the United Provinces" a copy of which has been already supplied to Imperial Council of Agricultural Research. The manufacturing expenses were estimated there at about Rs. 1-4 per maund. It is estimated that the present figure for this is about 12 as. per maund.

REPORT ON THE KHANDSARI ENQUIRIES IN THE UNITED PROVINCES AND THE PUNJAB, REGARDING THE PRODUCTION OF SUGAR BY THE OPEN PAN SYSTEM IN VILLAGES IN THE PUNJAB.

(1) The number of Khanchis	473
(2) The number of cultivators (or Zamindars) who make sugar instead of gur or in addition to gur	646
(3) The number of bels for sugarcane boiling as distinct from gur pans	221
(4) The number of centrifugals hand driven	41
(5) The number of centrifugals power driven	109
(6) The amount of sugar made (1933-34)	112,920 maunds or 4,144 tons.
(7) The area under improved canes in villages in which sugar is produced by the open pan process	8,888 acres.
(8) The total area under sugarcane in villages in which sugar is produced by the open pan process	19,118 acres.
(9) If possible the amount of sugar produced in 1932-33	262,816 maunds or 9,645 tons.

Production of Sugar by open pan process in villages in the Punjab (1933-34).

Serial No.	Name of District.	The number of number of Khanchis.	The number of cultivators (or Zamindars) who make sugar instead of gur or in addition to gur.	The number of sugarcane boiling as distinct from gur pans.	The number of centrifugals hand driven.	The number of centrifugals power driven.	The amount of sugar made in 1933-34.	The area under improved canes.	The total area under sugarcane in a village.	If possible the amount of sugar produced in 1932-33.	REMARKS.
1	2	3	4	5	6	7	8	9	10	11	12
1	Hissar	..	1	7	..	2	327	..	27	Mds.	
2	Rohitak	1	1	1	..	..	..	59	88	60	
3	Karnal	..	..	..	..	2	750	701	1,602	3,005	
4	Ambala	32	90	10	3	7	26,641	263	601	8,264	
5	Kangra	5	8	2	1	2	27	27	126	104	
6	Hoshiarpur	16	53	34	8	7	748	177	419	1,343	
7	Jullunder	183	203	92	24	19	5,767	6,139	12,640	26,626	
8	Luddiana	85	122	30	1	7	4,736	50	486	6,968	

9	Ferozepore .	1	7	2	..	1	350	15	97	380
10	Lahore .	..	2	8	..	9	1,143	174	314	2,178
11	Amritsar .	17	1	1	1	2	28,000	2	133	180,040
12	Gurdaspur .	74	27	16	..	17	13,036	512	983	9,129
13	Gujranwala .	20	8	6	..	5	1,006	169	436	573
14	Sheikhpura .	1	21	3	1	3	750	101	300	385
15	Gujrat .	..	..	1	..	1	50	..	19	..
16	Montgomery .	34	101	5	..	5	1,465	235	288	2,120
17	Lyallpur .	4	..	..	2	17	28,102	245	540	20,901
18	Multan .	..	1	3	..	3	21	19	19	620
Total		473	646	221	41	109	112,920	8,888	19,118	262,816

NOTE 1.—There are 29 districts in the Punjab of which the sugarcane crop is of very little importance in 6 districts (Rawalpindi, Attock, Simla, Dera Gazi Khan, Mianwali and Jhelum) and in the remaining 5 (Muzaffargarh, Shahpur, Gurgson, Jhang and Sialkot) sugar was not produced by the open pan system.

NOTE 2.—Information regarding area under improved canes and the total area under sugarcane given in columns 9 and 10 relates only to those villages in which sugar was produced by the open pan process.

**REPORT ON PRODUCTION OF KHANDSARI SUGAR, RAB AND GUR IN THE
UNITED PROVINCES.**

1. *Introductory.*—The rapid development of the sugar industry in India following the imposition of a high protective duty in 1932 has led to important discussions on the total demand for sugar, the present output from vacuum factories, refineries, open pan *Khandsari* factories and other sources and the scope for future expansion of the industry. Statistics of the total number of modern sugar factories, their cane crushing capacity and the total amount of sugar produced by each, along with other details are now available in the various reports prepared and published by the Sugar Bureau. No reliable statistics of the production of *khandsari* sugar prepared under the indigenous *bel khanchi* systems are, however, available. People in the villages to a large extent and in the cities and towns to a smaller extent use gur in place of sugar. In other words gur is a substitute for sugar and its use has therefore an important bearing on the demand for sugar. The total production of gur for edible purposes is not correctly known. In order to secure reliable figures of the production of gur, *khandsari* sugar, etc., a census was taken in the summer of 1934, with the help of the revenue staff.

Forms I. F.-7 and I. F.-8 (Appendix 1 and 2) were distributed to all Patwaries and Qanungoes in the province and detailed instructions (Appendix 3) were issued to district officers for the filling up of these forms in every village, notified area, township and municipalities. Four special investigators were appointed to tour round the principal centres of the *khandsari* industry (*vide* Appendix 4) both to collect statistics in important towns as well as to inspect the work of the revenue staff of the villages in their respective circles. The statistician also toured in most of the districts producing *khandsari* sugar (Appendix 4) to inspect the work of the investigators and the revenue staff and to give necessary directions to Patwaries and Qanungoes for the correct record of information in the forms provided for the purpose. The information collected by the Patwaries for each village was compiled for each qanungo circle, tahsil and district by higher revenue authorities. These were rechecked in the office of the Bureau of statistics and Economic Research and divisional and provincial totals have also been given.

2. *Acknowledgements.*—I have received ungrudging help in the course of my enquiries from all district officers and the subordinate revenue staff without whose co-operation and help no census could have been possible. I am also indebted to the Director of Agriculture and the Sugar Technologist for their ready assistance both in planning the enquiry as well as in marshalling the statistics collected. Messrs. Maqbool Ahmad, Ram Narain Saksena, Murli Dhar Joshi and Shiva Charan Das Gupta, investigators, also deserve mention for their ceaseless efforts in trying to arrive at correct estimates of production in spite of the opposition of *khandsaris* in many places for want of proper understanding of the object of the enquiry and the general belief that the enquiry was directly or indirectly connected with the assessment for excise which was imposed by Government in the season. The investigators had often to work under severe strain as they has occasionally to move amidst people and localities which were both unfamiliar and unsympathetic if not positively hostile.

3. *Some difficulties.*—When arrangements for the census were complete and the forms had been printed and distributed to the district authorities it was found that the time chosen for the enquiry was rather inopportune. Patwaries and Qanungoes were at the time preoccupied with the preparation of statements of remission and suspension of rent and revenue according to certain formulae then under the consideration of Government. It was therefore decided to simplify the forms and to collect the absolute minimum of information which was necessary. Accordingly items 3, 5, 12, 13 and 18 of Form I. F.-7 were given up. Information under items 2, 4, 6, 10, 11, 14, 15 and 16 has also been found to be more or less incomplete or unreliable

either for want of proper understanding on the part of the Patwaries or for want of adequate time to make enquiries.

4. *Accuracy of Statistics.*—As is well known, the Indian cultivator is generally illiterate and has no definite idea about his income and expenditure. Similarly many *khandsaris* keep no regular accounts and destroy even such vague entries as they make in their rough note books as soon as the operations close. In some cases accounts are not made until the time of Dashera or Diwali. In still other cases complete accounts are available until the beginning of the next crushing season when the operations connected with the preparation of sugar from molasses are completed. The principal figures, however, *viz.*, the area under cane cultivation (improved and *desi* varieties) juice, rab, gur and sugar have, however, been reported from all places by patwaries. In many cases, however, the figures had to be obtained by them along after the actual processes had taken place and are therefore more in the nature of estimate than actual statements of accounts. The Patwari does not always stay in the village and unfortunately at the time of the enquiry most of the patwaries were concentrated in the tahsil headquarters for over two months in connection with the rent formulæ. The figures for 1932-33 suffer still more from the defects outlined above and may be considered to be mere estimates, based on the knowledge of the Patwaries. It may, however, be said that the Patwari is generally a very well-informed person and possesses very intimate knowledge of the people residing in the villages under his charge as well as of their occupations. The estimates prepared by him are, therefore, not very far from actual facts.

5. *Yield of cane per acre.*—The production of cane per acre was found to vary from about 1,200 maunds per acre in some well-organised farms to practically *nil* in many ratoon crops. The revenue staff has not been used to reporting the yield of cane and often indulged in vague guesses. Some subordinate officials apparently confused yield per acre with *bigha* which is the more common unit of measurement. Reasonable allowances have been made in all such cases. In arriving at the district and provincial averages due weight has been given to the area under cultivation. On the whole the actual production of cane per acre appears to be considerably less than the most conservative estimates of the agriculture or the revenue departments.

6. *Khandsari figures.*—What has been said about the Patwari estimates of production cannot be vouchsafed for the estimates of the output of sugar supplied by the *khandsaris*. The *khandsari* is a very clever businessman and is very secretive both as regards the volume of his business as well as of the mode of his operations. Since the enquiry was taken up at about the same time as the announcement of the excise duty on sugar the *khandsari* was convinced in his mind of the inter-connection of the two and no amount of explanation or assurance would dispel his natural fears. Under the circumstances the figures supplied by the *khandsaris* were almost invariably under-estimates of the sugar actually produced by them. The investigators were, therefore, compelled to obtain correct estimates through other sources, *viz.*, the amount of rab purchased by the *khandsaris*, the quantity of sugar sold by him, the number and size of centrifugals or khanchis used and the period for which the operations lasted. The local revenue staff always co-operated with the investigators in arriving at correct estimates.

7. *Statistics of rab, gur, and sugar.*—The quantity of rab shown in the statements received from some districts was found to be disproportionately larger than the amount of *khandsari* sugar shown against them. Similarly it was noted that the amount of juice boiled in some tahsils and districts was out of all proportion to the gur or rab shown in that tahsil or district. In all such cases special enquiries were made through the district officers to find out the reasons for the variations in figures and attempts were made to remove the mistakes wherever they could be located. It was found on enquiries that in certain districts rab was extensively used for direct consumption besides for the manufacture of sugar. Hence the figures of

rab are not directly convertible into sugar. Similarly, juice in varying quantities was being used both for human as well as animal consumption in various places. The practice of chewing cane by people in villages is very common while agricultural labourers largely live upon cane during the season. Hence the quantity of juice produced in a particular tahsil or district does not give an absolutely correct idea of the amount of gur and rab made or the total quantity of cane utilised for the purpose.

The recovery of sugar from rab varied from 40 to 45 per cent. in some of the Rohilkhand *bels* to less than 25 per cent. in many parts of Sitapur Kheri, Hardoi, etc. Thus no average or means can be worked out with any degree of accuracy to represent correctly the conditions in the province as a whole.

8. *Tables.*—Table I gives (i) the area under sugar (a) *desi* varieties, (b) improved varieties and (c) total; (2) approximate yield of sugarcane per acre for (a) *desi* and (b) improved varieties; (3) total quantity of juice boiled; (4) and (5) quantity of rab and gur made. (6) number of *khandsaris*; (7) number of *khanchis*. (8) number of centrifugals. (9) total quantity of sugar made according to the Patwaris statements. Figures of the production of sugar in certain towns where investigations were carried out by special investigators were not included by the Patwaries in their statements. These have accordingly been added to the figures given by the Patwaries. The information has been tabulated by districts, political divisions, as well as for the province as a whole.

Table II gives the same information for the year 1932-33. As has already been stated the information for the year 1932-33 is based purely on the Patwari estimates since no records were available. It should, therefore, be taken merely as a rough estimate of the actual production. In some cases figures for the year 1932-33 were not given at all by the Patwaries for they could not make any reasonably correct estimates. In all such cases figures for 1933-34 have been repeated for 1932-33. Under the circumstances I do not think any fair comparison possible between the figures for the two years.

9. *Comparison with Forecast figures.*—According to the figures given in Table I the total area under cane cultivation in the whole of the United Provinces was 1,681,003 acres; 79 per cent. of the total area was under improved varieties and only 21 per cent. under ordinary or *desi* varieties. The average yield of *desi* cane was only 162 maunds per acre while the average yield of improved varieties was 266 maunds per acre. These figures are apparently very much lower than the estimates made by the Agriculture and the Revenue departments. The estimated production of gur in the United Provinces in the year 1933-34 according to the final sugarcane forecast report was 74,795,347 maunds whereas the total quantity of cane on the basis of this census amounts to 426,553,691 maunds only. Assuming that 11 maunds of cane are required to produce one maund of gur the total production of gur in the year 1933-34 was only 38,777,608 maunds. Evidently the difference between these two figures is rather high. The figures in the forecast report are based upon a limited number of crop cutting experiments conducted by the revenue department in the principal districts in the province. These experiments are not planned scientifically not carried out in a sufficiently large number of places to yield accurate information on which the provincial figure could be correctly based. The average or normal fields selected by the Patwari or the Qanungo for the crop cutting experiment is usually very much better than the average field according to strict statistical principles. The figures obtained by the crop cutting experiments are often revised by the superior revenue staff on the basis of their personal knowledge or experience. These alterations usually tend to further increase the already over weighted figure of the Patwari. I am inclined, therefore, to place more reliance on the figures obtained by a thorough and detailed census carried out in every village of the province as against the estimate made through a few crop cutting experiments. The observation of the special investigators in the various districts visited by

them as well as my personal observations in two-thirds of the districts of the province corroborates the figures given in this report. It is not sufficiently realised that the tendency to grow an increasing amount of cane by the cultivator in the same holding is rapidly exhausting the fertility of the soil. The fact that such over-cultivation is usually not accompanied with any appreciable quantity of restoratives in the form of chemical, green or farm-yard manure is tending rapidly towards barrenness. So that other things being equal the average yield of sugarcane per acre is likely to decline in the years to come unless effective measures are taken either to make good the loss in fertility sustained by the land or by judiciously restricting the area under sugarcane, or by popularising the cultivation of hemp and other leguminous crops.

10. *Khandsari Sugar*.—The figures of production of *khandsari* sugar show that the industry is not as important as it has been believed to be or that the industry has declined considerably during the last two years on account of the competition from big vacuum pan factories. According to the figures given in Table I the total production of *khandsari* sugar in the United Provinces in the year 1933-34 was 2,365,652 maunds or just a little less than 100,000 tons. It is possible, however, that in spite of the efforts of the revenue staff and the special investigators, a certain amount of sugar actually produced by *khandsaris* has not been included in the census or that the actual amount of sugar produced by certain *khandsaris* has been under-estimated by the census staff. Attempts were, however, made to secure as complete and correct information as possible by the investigators and it is not likely that any appreciable amount of sugar could have escaped them. Under the circumstances the province probably did not produce very much more than about 100,000 tons of *khandsari* sugar in the year 1933-34. The figures of juice, rab and gur were obtained from *bels* where detailed records are kept of the actual quantity made by each cultivator. There is no likelihood of any quantity of these articles not being included in the Patwari figures.

11. *Rab and juice*.—It has been noticed that a certain quantity of rab is directly consumed by people in all districts of the province. In the villages people generally prefer rab to gur on many occasions. Small quantities of rab made by cultivators in villages are usually meant for their own consumption, rather than for the manufacture of brown sugar which is not relished by them at all. Only the rab which is produced in fairly large quantities in organised *bels* passes to the *khandsaris* for centrifuging. In Rohilkhand, no doubt, big cultivators individually, and sometimes even small cultivators collectively prepare certain quantities of rab for sale to the *khandsaris*. This is due mainly to secure cash for payment of land rents or the dues of some pressing creditors. In the Eastern districts, however, rab is almost exclusively manufactured for edible purposes. Under the circumstances it is not likely that more than two-thirds of the total quantity of rab is actually refined into sugar.

The percentage of sugar to rab varies considerably from place to place according to the quality of cane used, the crystallisation of rab and the efficiency of the centrifugal. In rare case of all round efficiency a percentage of fifty is attained but on the average it is not more than 30 per cent. in the Rohilkhand area. In other parts of the provinces the percentage is considerably lower. The average yield of *khandsari* sugar in the province as a whole is not likely to be very much higher than 25 per cent. of the rab used for the purpose. Under the circumstances the total quantity of sugar produced, viz., 2,365,652 maunds fully accounts for all the rab manufactured in the Province. The quantity of juice boiled also appears to be proportional to the quantity of rab and gur made. On the average ratio of juice to rab is 5 to 1 and that of juice to gur 6 to 1. The actual ratio, however, varies considerably according to the quality of the cane. Conversely let us see if the figures of the production of sugarcane given in the census

fully account for the various uses to which cane is put. In this connection the following table will be found interesting:—

	Maunds.
Cane crushed by sugar factories in 1933-34 .	82,012,706
Cane required for 11,043,263 maunds rab .	110,432,630
Cane required for 16,574,960 maunds gur .	180,324,560
Total .	374,769,896

According to the estimated yield of cane from *desi* and improved varieties, the total production of sugarcane in the province in the year 1933-34 was 426,553,691. The balance left over for seed and chewing after allowing for the amount used by factories and for making rab and gur is 51,783,795 which is just about the amount required for such purposes according to well-informed estimates. The figures given in the census, therefore, appear to be reasonably accurate and balanced.

(10) *Statement showing average cost of production and yield per acre of Sugarcane and Gur, supplied by the Imperial Council of Agricultural Research, Simla.*

Province.	District.	Crop.	Cost per acre.	Yield per acre.
			Rs. a. p.	Mds.
*Madras Presidency .	Bellary . .	Gur . .	258 14 4	80·64
	Coimbatore . .	„ . .	313 4 8	72·09
	Vizagapatam . .	„ . .	191 11 7	80·10
*Bombay Presidency	Poona . .	„ . .	397 1 8	112·24
United Provinces .	Gorakhpur . .	Sugarcane .	70 11 0	245·8
	Rohilkhand . .	„ . .	82 6 3	316·3
	Meerut . .	„ . .	88 9 10	324·1
*Punjab . . .	Lyallpur . .	Gur . .	Figures are not available as the data is with the Press.	21·67
	Gurdaspur . .	„ . .		14·79
	Jullunder . .	„ . .		24·12
Bihar . . .	Patna . .	Sugarcane .	90 0 3	335·38
	Saran . .	„ . .	66 12 10	262·40

(11) *Note on the additional expenditure required for the extension of the activities on Sugarcane Research, prepared and forwarded by Dr. W. Burns, Agricultural Expert, Imperial Council of Agricultural Research, dated the 8th September 1937.*

During 1936-37, the actual expenditure on sugarcane research (i.e., the amount paid out by the Imperial Council of Agricultural Research for

* The Madras, Bombay and Punjab provinces manufacture gur and do not sell sugarcane like the United Provinces and Bihar; and as such, the ledgers for Madras, Bombay and Punjab provinces contain the yield and cost per acre of gur only. Hence the word gur is inserted against these provinces in the statement.

schemes subsidized by it) was Rs. 3,45,612. For 1937-38 the budget estimate is Rs. 3,69,000. In addition, from the central reserve of the Sugar Excise Fund, the Government of India have recently placed at the disposal of the Imperial Council of Agricultural Research the following:—

	Rs.
* Investigation of insect pests of sugarcane in the provinces	1,00,000
Special experiments on the effect of ratooning	59,000

2. At the last meeting of the Sugar Committee of this Council considerable stress was laid on the fact that though so much was known, it was not being taken up nearly quickly enough by the cultivator. This is probably because we have not nearly enough field experimental work outside the experiment stations themselves. This weakness is referred, to repeatedly, by Sir John Russell in his report which is now being printed and will, I hope, be in your hands very soon. For example, he says—

“In many cases the work is confined too much to the laboratory and the pot culture house; the field and the growing crop should be the centre. Almost always it is restricted to the experiment station; test experiments should be carried out on other soils and at other centres not too far removed so as to ensure that all factors coming into play are recognised.”

Later on he says—

“For an individual comparison a single plot suffices provided it is well enough chosen and no accidents happen but for a group of improvements such as distinguish the experiment stations from the ryots holding, a single plot is inadequate and an entire holding would be better.”

The above two paragraphs deal with experimentation in general. The following are taken from the section on sugarcane in Sir John Russell's report:—

“At an early stage a much simplified form of experiment should be tried on cultivator's land. Conclusions drawn from an experiment at a research station are greatly strengthened if they are confirmed on other farms also and, if they are not, this shows the existence of some other factor playing an important part and needing investigation.”

In his Summary and Recommendations he says—

“*Manuring.*—More systematic schemes of manurial trials are necessary in order to test the relative values of nitrogen and artificial fertilizers, farm-yard manure and composts and the values of phosphates and potash. Simplified schemes should be carried out on cultivator's ground so as to discover what new factors, if any, come into play there and to find out also how far the station results hold generally.”

These recommendations agree very closely with my own opinions. At present I think additional expenditure on sugarcane research should definitely be put on field experiments carried out in some cases on complete holdings, and in other cases on individual plots at as many suitable centres as can be financed. In the conclusion of my original note to the Tariff Board I pointed out that the practical aim of our researches taken as a whole should be the devising of a standard agricultural procedure suitable for each particular tract. In some sugarcane areas, there is an approximation

* The “Central” part of the scheme is being carried out at the Imperial Agricultural Research Institute at Delhi and an amount of Rs. 96,000 for a period of 3 years from 1936-37 has been sanctioned by the Imperial Council of Agricultural Research in addition various Provincial Governments are spending fair amounts on sugarcane research. I observe that the United Provinces Government have put an item in their budget amongst the new items of expenditure of Rs. ½ lakh to be spent on gur development,

to such a standard procedure, in others it has hardly been envisaged. Experiments such as I have suggested (on complete holdings particularly) would give an opportunity to experimenters to put together into the form of a standard procedure the best of their station results and so try out, as a whole, the various scattered results of several years and probably several experiment stations. It will also give experimenters the opportunity of modifying such standard procedure before it is really passed for wide propaganda. I definitely recommend therefore that to this kind of sugarcane experiment should be devoted any funds that are now likely to be available. It is somewhat difficult to suggest amounts, since the needs and opportunities of different provinces vary. But I should suggest not less than a lakh per year for five years for the whole of India to be distributed between provinces more or less roughly in proportion to the amount of sugarcane grown. This cannot be absolutely adhered to, since otherwise provinces like Bombay would get a rather diminutive amount and I should suggest not less than Rs. 5,000 to any province and not more than Rs. 25,000 to any province. It is also expected that the provincial Governments will supplement these grants according to the urgency and their own local problems.

Replies received from the Imperial Institute of Sugar Technology, Cawnpore.

- (1) *Letter, dated the 12th May, 1937, from the Tariff Board to Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

I am desired to forward a set of questionnaires issued by the Board in connection with the Sugar Tariff enquiry and to request you to send any facts and figures other than those already supplied by you relating to any of the points raised therein.

2. The Board will be glad if you will kindly send a note of the work done at the Technological Institute since 1930, of the assistance given to the industry and of the work you are at present engaged upon specially towards the utilisation of by-products of the sugar industry.

- (2) *Letter, dated 9th July, 1937, from the Director, Imperial Institute of Sugar Technology, Cawnpore.*

Kindly refer to your letter, dated the 12th May, 1937. As desired in paragraph 2 of this letter I send herewith three copies of a note dealing with the work done at the Harcourt Butler Technological Institute and by the Sugar Technologist to the Imperial Council of Agricultural Research since 1930. If any further information is required in this connection, I may kindly be informed.

Enclosure.

NOTE ON THE WORK DONE BY THE SUGAR SECTION OF THE HARCOURT BUTLER TECHNOLOGICAL INSTITUTE AND THE OFFICE OF THE SUGAR TECHNOLOGIST TO THE IMPERIAL COUNCIL OF AGRICULTURAL RESEARCH, INDIA, BY R. C. SRIVASTAVA, ESQ., B.Sc., DIRECTOR, IMPERIAL INSTITUTE OF SUGAR TECHNOLOGY, INDIA, CAWNPORE.

Establishment and Scope of Activities.

The Harcourt Butler Technological Institute.—The Institute owes its origin to the recommendations of the Holland Indian Industrial Commission and its name to His Excellency Sir Harcourt Butler, Governor of the United Provinces who laid the foundation stone of the permanent Institute building in 1921. It was started in 1920 with the aim of providing a centre for Technological Research devoted to finding ways and means of promoting and

developing the industries of the United Provinces and the country and to serve as a training and recruiting centre for Technologists qualified to occupy positions on the superior staff of selected industries. It commenced imparting instruction in General Applied Chemistry and Oil Chemistry and Technology in 1921. The Sugar Section was added in 1926 and grew to be the most important Section of the Institute, largely due to the prominent position of the Sugar Industry in the United Provinces. The important and useful work done by the Institute in supplying trained Chemists and Technologists to the Sugar Industry and fostering research was recognised by the Imperial Council of Agricultural Research which in 1931 gave a non-recurring grant of Rs. 1,25,000 for the purchase of a sugar plant and a recurring grant of Rs. 20,000 per annum for a period of 5 years for running a sugar factory for research and teaching purposes.

The Sugar Technologist's Office.—In 1930 the Imperial Council of Agricultural Research, on the recommendation of the Sugar Committee appointed a Sugar Technologist to assist in the improvement and general development of the Indian Sugar Industry. The functions of the Sugar Technologist whose office was located at the Harcourt Butler Technological Institute were:—

- (1) To advise sugar factory proprietors and managers in India on any difficulties which may arise in factory working and as to means of improving the efficiency of their factories;
- (2) To advise generally the promoters of new sugar factories and furnish information in regard to the selection of machinery, factory lay-out and similar technical matters;
- (3) To carry out experimental work with the object of improving sugar factory practice in India, and
- (4) To carry out experiments with the object of improving the indigenous methods of gur and sugar manufacture.

In addition to the above duties he was also entrusted with the guidance of research and teaching work conducted at the Sugar Section of the Harcourt Butler Technological Institute and was appointed the Honorary Head of the Section. The work of the Sugar Bureau and Sugar Cable Service at Pusa which consisted mainly of collection and dissemination of information, both Indian and foreign, on all aspects, technical, commercial and statistical, of the Cane Sugar Industry, was also transferred to his charge in the same year on the recommendations of the Sugar Committee.

Since 1931 the Sugar Section of Harcourt Butler Technological Institute and the office of the Sugar Technologist have been working in close collaboration with each other. As a result, besides supplying trained chemists and technologists to the industry, much useful work has been done and workable schemes have been prepared for the utilisation of by-products of the industry. A large amount of technical and statistical information has been collected, with the help of which it is now possible to give sound and useful advice on almost all important problems relating to the Sugar Industry.

The Government of India, realising the growing needs of the Indian sugar industry and the useful services rendered by the Sugar Section of the Harcourt Butler Technological Institute and the office of the Sugar Technologist, have, with effect from the 1st October, 1936, merged them into an All-India Imperial Institute of Sugar Technology.

The subject matter of the present note is presented under the following heads:—

- (1) Training of technical men for the sugar industry.
- (2) Research work relating to the vacuum pan sugar industry.
- (3) Research work relating to the open pan sugar industry.
- (4) Technical assistance to the sugar industry.
- (5) Library.
- (6) Sugar grading—the Bureau of Sugar Standards.

- (7) Sugar Market Reports.
- (8) Statistical review and reports.
- (9) Sugar Production Rules.
- (10) Employment Bureau.

Training of Technical Men for the Sugar Industry.

As already stated the Sugar Section of the Institute was opened in 1926. The start was modest but it subsequently grew to be the most active and important section of the Institute. Till 1931 only three students were admitted to this section each year. The training was imparted free of tuition fees to students from the United Provinces. Provision was also made for training of students from other provinces provided the Local Governments concerned met a part of the expenses incurred on such training. The minimum qualification for admission was Intermediate in Science and the admission was through a competitive entrance examination. The period of study extended over three years and the course of instruction comprised of general chemical technology, physics and engineering in the first year. This was intended to give the students an adequate scientific basis for more detailed and advanced study of sugar chemistry and technology. In the second and third years, the course of instruction consisted of lectures on the chemistry of sugar manufacture, on the machinery and other plant used in the industry, on industrial organisation, cost accounting, etc., practical work in the laboratory and in mechanical engineering workshops and drawing office; also instruction in factories on the manufacturing processes carried out on a commercial scale. Study of general chemistry and chemical and mechanical engineering was, however, maintained throughout the period as a background for the purely technological instruction. Instruction was also imparted in the manufacture of alcohol by fermentation and distillation of molasses. The work of the Section as of the whole of the Institute was guided by an Advisory Committee, a Standing Committee on Research and a Board of Studies consisting of scientific men of eminence and veteran industrialists of the province.

After the grant of protection to the sugar industry in 1931 there was a rapid development of the industry. To meet its growing demands the scope of teaching work in the sugar section was greatly extended. Five courses of instruction were designed to train the various types of men required in the industry, viz., (i) Sugar Diploma Course of two years, (ii) Post Diploma Research Course of two sessions of four months each, (iii) Sugar Analysts' Course of two years, (iv) Sugar Boilers' Course of one year, and (v) A course for foremen in khandsaris of one year. The number of students admitted to the Diploma Course was also increased from three to ten and in addition an equal number of students was admitted on behalf of the Imperial Council of Agricultural Research. In return the Council gave a substantial grant to the sugar section for erection and maintenance of a sugar factory for teaching and research purposes and to allow the services of its Sugar Technologist as honorary head of the Sugar Section. The minimum qualification for admission was raised to B.Sc. degree and admission was made through a selective personal interview. The courses of instruction remained practically the same excepting for the preliminary 1st year's course which was omitted. More stress was laid on practical aspects of the industry. Students in the 1st year were trained in the Experimental Sugar Factory attached to the Institute and in the 2nd year in an up-to-date sugar factory run on commercial lines, for one complete working season.

To the Post Diploma Course, admission was restricted to two students per year and their work consisted mainly in studying special problems which they might have come across in the factories. The minimum qualification for admission to course (3) was Intermediate in science, for course (4) a High School Certificate and for course (5) a final certificate of a recognised technical (engineering) school. Admission was limited to 3, 3, 6 students to the above courses respectively. The analyst students were taught the

chemical aspects of the sugar industry and the sugar boilers, the boiling operations in sugar manufacture. Foremen for the khandsari sugar industry were given training in all operations relating to indigenous method of sugar manufacture.

The courses of study have been further revised for the newly started Imperial Institute of Sugar Technology. This following schedule gives details of the new courses prescribed for the Institute:—

- (i) Associateship of the Institute in Sugar Technology (A. I. I. S. T.)—

Number of students.—12 admissions each year.

Admission qualifications.—Degree of B.Sc. in Physics, Chemistry and Mathematics or of M.Sc., in one of these subjects or an equivalent qualification.

Duration of Course.—Three years, including one season's training in the Institute factory and one season in outside factory.

- (ii) Associateship of the Institute in Sugar Engineering (A. I. I. S. T.)—

Number of students.—12 admissions each year.

Admission qualifications.—Degree of Bachelor in Mechanical and Electrical Engineering or an equivalent qualification.

Duration of course.—Three years including one season in the Institute factory and one season in outside factory.

- (iii) Fellowship of the Institute in Sugar Technology or Sugar Engineering (F. I. I. S. T.)—

Number of students.—3 admissions each year for each section (Sugar Technology and Sugar Engineering).

Admission qualifications.—Associate of the Institute or of recognised Institutions abroad.

Duration of Course.—Two years during non-working period of cane factories and two seasons' factory experience after qualifying for Associateship.

Nature of training.—Research work (or, in the case of Sugar Engineering Section, design work) at the Institute. Thesis to be submitted.

- (iv) Sugar Boilers' Certificate Course—

Number of students.—12 admissions each year.

Admission qualifications.—Intermediate examination in Science or an equivalent qualification.

Duration of Course.—One year at the Institute. (Certificate to be granted after candidates have acquired at least two years' practical experience of pan boiling).

- (v) Short courses will be provided in the following subjects for men employed in factories and possessing suitable technical and academical qualifications—

(a) Chemical control—Extending over 2 sessions.

(b) Pan boiling—Extending over 1 session.

(c) Fuel and Boiler Control—Extending over 1 session.

(d) Bacteriology—Extending over 2 sessions.

(e) Statistics—Extending over 1 session.

(f) Dutch language—Extending over 1 session.

During the 10 years of its existence the sugar section has trained in all 208 students. Out of this number 138 passed out from the Diploma Course, 25 from the Analysts' Course, 46 from the Sugar Boilers' Course and 1 from the Khandsari Course. Practically all the students have found employment in the sugar industry and some of the older students have

attained the top-most positions in sugar factories. It is indeed very gratifying to be able to say that the sugar section has fulfilled its promise and achieved its aim. It has supplied to the industry at the time of its rapid and extensive development fully trained Sugar Technologists and Chemists who have contributed their share towards its growth and have thus justified the training given at the Institute.

Research Work relating to the Vacuum Pan Sugar Industry.

Although the staff and laboratory equipment of the Harcourt Butler Technological Institute were inadequate for any elaborate researches, a fair amount of research work was carried out in the sugar section during the period under review, especially on the utilization of the by-products of the sugar industry. As a result of these researches, working schemes have been prepared in respect of certain methods of utilization of molasses. It has not been possible, however, to try these schemes on an industrial scale so far.

The work done has been mostly at the initiative of the staff and students of the Institute. It is somewhat disappointing to find that there has been practically no demand for investigation into particular problems from the sugar industry. The following list gives brief particulars of the various researches conducted at the Institute:—

(a) RESEARCH WORK DONE PRIOR TO 1930.

(i) *Cause of the low yield of alcohol in the fermentation of cane molasses.*—An investigation into the nature of the reducing bodies (shown as unfermented sugars) present in the spent wash. The reducing bodies were found to consist of gums of galactan and xylan types and hence incapable of fermentation.

(ii) *Recovery of sucrose from cane sugar molasses.*—By the process developed 84 per cent. of the sugar in molasses could be recovered in the form of a syrup of 70 purity. Further semi-large scale experiments are, however, necessary before practical details and working costs can be worked out.

(b) RESEARCH WORK DONE AFTER 1930.

(i) The assay of a few grades of Indian and imported sugars following the methods adopted at the Java Proofstation.

The above work was done as a preliminary to the evolution of the Indian Sugar Standards and led to the establishment of the Bureau of Sugar Standards.

(ii) Complete analysis of typical samples of final molasses from various Indian Sugar Factories.

Typical samples of sulphitation, carbonitation and refinery exhaust molasses from various factories were analysed. These researches have given an insight into the exact nature of impurities present and have led to the formulation of a rule by which the true purity of the outgoing molasses can be determined from the apparent gravity purity and ash content.

(iii) *Experiments on cane dryage.*—Complete analyses of two varieties of cane, Co. 213 and Co. 312 were made during dryage extending over 25 days. The researches showed that the power to resist the effects of dryage varies with different varieties. Co. 312 was found to deteriorate earlier than Co. 213.

(iv) *Experiments on dehydration of alcohol.*—A study on the improvement of the Hiag process consisting in the devising of a new dehydrating salt mixture giving a perfectly fusible salt (Hiag salt has the disadvantage of crystallising out) assuring more efficient dehydration. Such a mixture was prepared and patented under Indian Patent No. 20478. Large-scale tests with the new salt mixture were carried out by Mr. G. H. Dickson of Messrs. Begg Sutherland and Co., Ltd., and gave successful results.

(v) *Improvements in the rectifying process for the manufacture of absolute alcohol.*—The result was an improved rectifying column and is the

first process patented for alcohol distillation in vacuo (Indian Patent No. 20500).

(vi) *Kerosene oil and absolute alcohol mixtures and their suitability for burning and illuminating purposes.*—Experiments have shown that kerosene oil mixed with absolute alcohol in certain proportions is a better fuel for illuminating and heating purposes.

(vii) *Acetic acid and allied products from cane molasses.*—The culture and propagation of strains of *Mycoderma Aceti* in tropical climates suitable for the manufacture of glacial acetic acid and allied products was studied. Further work on this will be resumed shortly in view of the importance of the rayon industry in India.

(viii) *Experiments on the treatment of sugar factory effluents.*—Disposal of the sugar factory effluents without creating a nuisance has become a serious problem. As a result of the researches carried out in this connection a simple and economic process for dealing with this nuisance has been evolved and an effluent plant has been erected and tried with successful results at the Experimental Sugar Factory attached to the Institute. Tentative schemes for recommendation to sugar factories are now under preparation.

(ix) *Manufacture of an insoluble road composition from molasses.*—An insoluble road composition from molasses has been prepared. About a furlong of road in front of the Institute buildings was prepared with the above composition in collaboration with Messrs. Ford and Macdonald, Ltd., Engineers, Cawnpore. The road has already stood the rains as well as heavy cane traffic. The results are promising and further semi-large scale tests are in progress.

(x) *Experiments on the manufacture of balanced cattle-feeds from molasses, bagasse-screenings and oil-cake.*—Balanced feeds consisting of mixtures in varying proportions of dry bagasse-screenings, oil-cakes and molasses have been prepared and pressed into cakes. Feeding trials with these are at present in progress at various animal nutrition centres.

(xi) *Experiments on activated compost from cane-trash.*—Cane-trash with press-mud was composted according to the method of Dr. Fowler. The manure thus obtained has been found to have a high nitrogen content and it can be utilised with advantage on cane fields.

(xii) *Elimination of lime from factory molasses in order to make it edible.*—This work was done on a laboratory scale only.

(xiii) *Conductometric elimination of ash in various grades of Indian Sugars.*

(c) RESEARCH WORK AT PRESENT IN PROGRESS.

In addition to the above the following experimental and research work is in progress at present:—

- (i) Studies in butyl alcohol fermentation.
- (ii) Isolation of strains of non-inverting yeasts for the recovery of sugar from molasses.
- (iii) Different methods of sweetening of filter presses.
- (iv) Experiments on the keeping quality of sugars.
- (v) Experiments on the optimum pH for juice settling.
- (vi) Dry liming and milk of lime clarification.
- (vii) Experiments with different dyes for the blueing of sugars.
- (viii) Preservation of cane from deterioration due to dryage.
- (ix) Utilization of molasses in the making of bitumen emulsions.
- (x) The recovery of the valuable constituents of molasses by treating the same with suitable mixtures of organic solvents.
- (xi) Preliminary examination of the amount of sugars recoverable by the continued dialysis of a sample of molasses and the nature of the colloids present in the residue.

Research Work relating to the Open Pan Sugar Industry.

The manufacture of sugar and gur by the indigenous process of manufacture constitutes an important industry in India. It is estimated that at present nearly 75 per cent. of the cane produced in India is being utilized for this purpose. The manufacture of sugar by the open pan process is well-known to be wasteful. The industry is run on crude and antiquated lines but from the point of view of the general agricultural system of the country and the small grower of cane the process is of very great importance and any measures adopted for increasing its efficiency will directly benefit the petty agriculturist. With this object in view the Imperial Council of Agricultural Research has interested itself in experiments for improving this section of the industry.

(a) **BILARI EXPERIMENTS OF 1931.**

(i) In 1930 the Council gave a grant of Rs. 10,600 for carrying out comparative trials of Bhopal and Rohilkhand systems of rab making by the open pan system. Preliminary experiments were made in Bhopal early in 1930. Further experiments on a commercial scale and under careful chemical control were conducted at Bilari during the cane season 1930-31 and the report on the work has been published in the Scientific Monograph No. 3 of the Council entitled "The Open Pan System of White Sugar Manufacture" by R. C. Srivastava. The main object of the experiments was to scientifically test the two types of bels and to suggest improvements. Details of the experiments will be found in the Monograph a copy of which is sent with this note. An improved type of Rohilkhand bel was designed as a result of these experiments, which has been run commercially for three seasons with satisfactory results.

(ii) *Designing of small power crushers for cane.*—The Imperial Council of Agricultural Research gave grants of Rs. 8,000 each to several cane-growing provinces for experiments on improved types of power driven cane crushers suitable for the khandsari industry. The grant given to the United Provinces was placed at the disposal of the Sugar Technologist by the Director of Agriculture. Two crushers (called the I. C. A. R. crushers I and II) were accordingly designed, manufactured and tested. The crushers are of simple but improved design and have given satisfactory results. They are now being manufactured for sale to the public by Messrs. Kirloskar Brothers of Satara (Bombay).

(iii) *The Sugar Research and Testing Station, Bilari.*—After the Bilari Experiments of 1931, the Council sanctioned a scheme for the establishment of a Research and Testing Station for the indigenous system of gur and sugar manufacture. The object of the Research Station is to investigate all problems relating to the Open Pan Sugar Industry in general and the evolution of simple and inexpensive types of mechanical equipment suitable for the above process in particular. After the completion of buildings, the Research Station commenced research work from the 1936-37 cane crushing season. The following machinery has already been tested as a preliminary to designing improved machinery and making improvements in the existing machinery:—

(i) **Crushers:—**

- (1) I. C. A. R. No. I. (Made by Kirloskar Brothers.)
- (2) I. C. A. R. No. II. (Made by Kirloskar Brothers.)
- (3) Vasant Crusher. (Made by Kirloskar Brothers.)
- (4) Phoenix Crusher. (Made by Jessops.)

(ii) **Bels:—**

- (5) Poona bel.
- (6) Rohilkhand bel.
- (7) Delhi bel for cream jaggery.
- (8) Jullundar bel.

- (9) Bhopal bel (molasses).
- (10) Ignition furnace for carbon.
- (iii) Crystallisers and Centrifugals:—
- (11) Revolving crystallisers.
- (12) Berry's centrifugals.
- (13) Centrifugal K. 19 (Kirkoskar Bros.).

The following research work was also under taken at the Station during the season 1936-37:—

- (1) Comparative study of storing rab in (i) kalsies, (ii) drums, (iii) wooden boxes, and (iv) nand.
- (2) Designing and testing of a hand or a power driven crystalliser.
- (3) Designing and testing of a bullock driven ball-bearing cane mill.
- (4) Sugar Candy manufacture from low grade khandsari sugar using activated carbon.
- (5) Manufacture of decolourising carbons from paddy husk, bagasse and dhak leaves.
- (6) Gur making with neutralised juice (using lime water) for use in refineries.
- (7) Keeping quality of syrup from neutralised cane juice.

Researches at the Harcourt Butler Technological Institute.

The following experimental work has also been carried out in the sugar section of the Institute with a view to improving the indigenous process of sugar manufacture:—

- (i) Sugar losses in open pan boiling during the manufacture of sugar by the indigenous process in India.
- (ii) Experiments on the use of various chars for the refining of brown sugar.
- (iii) Use of chemical reagents for the clarification of cane juice in open pan boiling.
- (iv) A rapid filtering device for cane juice in open pan boiling.
- (v) Experiment on the keeping quality of gur.

Technical Assistance to the Sugar Industry.

In its recent rapid development, the Sugar Industry has made the fullest use of the facilities provided by the Council's Sugar Technologist. A pamphlet entitled "Facilities for the Sugar Industry provided by the Sugar Technologist, Imperial Council of Agricultural Research, India, Cawnpore", giving details of the facilities afforded by the Sugar Technologist's Office to the promoters and owners of sugar factories in India was compiled in 1932 and distributed freely amongst those interested in the development of the industry. (Four copies of the above pamphlet are attached to this note for perusal by the members of the Board).

The services of the Sugar Technologist were in demand for a variety of purposes. Advice and information were supplied by him regarding suitable sites for new factories, specifications of machinery and complete schemes for factories were prepared, tenders were scrutinised and technical assistance in various other ways was rendered to promoters of new factories. He was invited by a number of factories every year for inspection and advice in regard to their working schemes, to help them in improving their efficiencies, to advise them on expansion and many other matters of a similar nature. He was also frequently called upon by the Government of India and various Provincial Governments to advise or assist them on technical matters relating to the Sugar Industry important amongst which

may be mentioned the Simla Sugar Conference held in 1933,* the Sugarcane Conferences of the United Provinces held in May, 1935, December, 1935, July, 1936, January, 1937 and June, 1937, and advice given to the Governments of Bihar and Burma, in connection with the fixation of minimum prices of cane. The Governments of the United Provinces and Bombay also consulted him in connection with the possibilities of developing sugarcane cultivation and starting of factories in the Sarda Cannal area in the United Provinces and the Deccan Cannal area in the Bombay Presidency. Advice in regard to the development of the indigenous process of sugar and gur manufacturer was also given from time to time to the United Provinces Government. His services were also in demand by a number of Indian States, notably Mysore, Hyderabad, Bhopal and Baroda, who sought his advice on the possibilities of developing sugarcane cultivation and of starting sugar factories in their territories. Extensive tours had to be undertaken by the Sugar Technologist in this connection. As a result of his recommendation the first three States have either already developed or are in the course of developing a sugar industry of their own.

In addition to the above large number of technical enquiries were also attended to by him through correspondence and a great deal of analytical work was undertaken for sugar factories and private bodies. He was also responsible to the Government for analysing disputed samples of sugar for levying Excise Duty. Two maps showing (i) Sugar Factories and Railways in India, and (ii) Showing area under sugarcane, have also been recently prepared and published under his guidance. The table below gives a synopsis of the work done since 1933-34.

TABLE I.—*Showing Technical Assistance rendered by the Sugar Technologist to the Sugar Industry since 1933-34.*

Particulars.	Year.			
	1933-34.	1934-35.	1935-36.	1936-37.
(1) No. of persons advised regarding sites, etc.	129	115	123	67
(i) Specifications and schemes drawn up and tenders and factory run reports scrutinised.	52	30	30	33
(ii) Technical advice dealing with erection, starting up and extension (including sites).	77	85	93	34
(2) No. of factories advised during operation regarding efficiency of working.	27	47	116	144
(3) No. of replies regarding technical education in India and abroad.	87	34	55	39
(4) No. of replies to general technical enquiries (excluding the above).	259	315	366	701
(5) No. of sugar factories helped in recruiting their technical staff.	36	24	33	26

* The notes prepared by the Sugar Technologist for the Simla Sugar Conference, at which important decisions were taken in connection with the provisions of Section vi of the Sugar Industry Protection Act have been treated as confidential and have not been published in the report of the Conference. Copies of the notes may be obtained from the Secretary, Government of India, Education, Health and Lands Department. The notes contain important statistic relating to the Sugar Industry which may be of interest to the Board.

Library.

An up-to-date library containing books dealing with all aspects of the sugar industry has been maintained by the office of the Sugar Technologist since its start. Most of the foreign and Indian journals, dealing with subjects pertaining to sugar are also received. The library is open to all interested in the sugar industry and books are given on loan to Government officers and all *bond fide* employees or owners of sugar factories. The library has been freely used by those connected with the industry.

Sugar Grading.—The Bureau of Sugar Standards.

With the increase in production of sugar, attention was increasingly directed towards a rationalisation of the system of sales and distribution. It was felt, however, that an essential preliminary to such rationalisation was the grading of sugars and setting up of standards which would be equally acceptable to both the seller and the buyer and would help the industry in—

- (a) developing sugar sales in distant markets without having to send samples from each factory;
- (b) securing greater uniformity amongst the various qualities of sugar made by different factories;
- (c) raising the general standard of quality of sugars manufactured by Indian factories; and
- (d) in providing a basis for comparison in cases of dispute.

A detailed examination of the chemical and physical properties of Indian and imported sugars was accordingly taken in hand in 1933 in the sugar section laboratories of the Harcourt Butler Technological Institute. On the basis of the results thus obtained a scheme for setting up a Bureau of Sugar Standards which was sanctioned on a self-supporting basis by the Imperial Council of Agricultural Research.

The Bureau commenced its work from 1st March, 1935, under the control of the Sugar Technologist (now Director, Imperial Institute of Sugar Technology).

Its main functions are:—

- (1) the preparation and supply of sugar standards every year;
- (2) the publication of an annual review dealing with the quality of different grades of Indian Sugars and giving comparative figures for competitive foreign sugars, and
- (3) the maintenance of a Museum of samples of sugars and sugar products.

The Bureau is assisted by an Advisory Committee with the Director, Imperial Institute of Sugar Technology, as Chairman and having as members representatives of manufacturers, merchants and brokers and a representative of the Sugar Technologists' Association of India. It is attached to the office of the Director, Imperial Institute of Sugar Technology. The Advisory Committee meets once every year.

Sets of Indian Sugar Standards are prepared every year in consultation with the Advisory Committee and are sold to merchants and manufacturers. The Standards have not so far been adopted as a basis for defining the quality of sugar for purposes of making sales (excepting for the production of three factories) but a large number of factories are using them for controlling the quality of their production of sugar. The Reviews of the quality of sugar for the seasons 1935-36 and 1936-37 (copies attached) show that there has been a steady improvement in the quality of Indian made sugars.

Samples of sugar manufactured by vacuum pan as well as open pan factories and khandsaris, as also samples of imported sugars are obtained and exhibited in the Museum. Samples of gur and rab from different agricultural centres and other sugar products are also obtained and exhibited.

Confidential reports on the quality in terms of the Indian Sugar Standards are supplied to the factories concerned for the purpose of popularizing the use of Standards.

Although the Indian Sugar Standards have not yet been universally adopted by the industry, certain negotiations which are proceeding between organizations of merchants and manufacturers, give hope of their being adopted for the purpose of sugar sale contracts in the near future.

Sugar Market Reports.

The Sugar Cable and Sugar Postal services were established on 11th January, 1922, as a branch of the Sugar Bureau, under the administrative control of the Director, Imperial Institute of Agricultural Research, Pusa. These services were subsequently taken over by the Imperial Council of Agricultural Research on the recommendation of the Sugar Committee and were placed under the charge of the Sugar Technologist from 1st April, 1931. To meet the needs of the Sugar Industry in India, one more service called the Sugar Trade Information Service was started by the Imperial Council of Agricultural Research in March, 1934, under its Sugar Technologist. On the formation of the Imperial Institute of Sugar Technology on the 1st October, 1936, these services were transferred to the Institute.

These services are the first of their kind in India and are run on the lines of some of the well-established sugar trade news-agencies in foreign countries. The main object of these services is to collect and supply, as promptly as possible, authentic and up-to-date information on all aspects of the Sugar Trade, viz., general market conditions, future tendencies, prices of various sugars in different parts of the country, arrivals, despatches, sales and stocks of sugars in different markets, etc., etc. Under arrangements made for these services crop and market reports as well as general information on all matters of interest to the sugar trade are received by telegram as well as by post from reliable and well-informed correspondents in Java, London, New York, Calcutta, Bombay, Karachi, Madras, Rangoon, the Kathiawar Ports and other important Indian Markets and the subject matter is immediately telegraphed to the subscribers of the Sugar Cable Service and posted to the members of the Sugar Postal Service.

Subscribers to the Indian Sugar Trade Information Service receive circulars by post containing as complete and reliable information as is available from several important markets throughout India on the following amongst other matters of interest to the Industry—

- (a) Daily information for each market relating to—
 - (1) The factory delivery and spot prices of sugars, Indian, Khandasari and foreign.
 - (2) Particulars of sales, stocks, despatches, etc.
- (b) Weekly information for each market relating to—
 - (1) General condition and future tendencies of the market.
 - (2) Particulars of total stocks, arrivals, despatches, etc.
- (c) Periodical information relating to—
 - (1) Weather and crop reports of India.
 - (2) Forecasts of sugar crop in India.

The rates of subscription have been kept fairly low, in order to encourage a wide and general use of the services. The subscription for members of the Sugar Cable and Postal Services, who also receive all circulars of the Sugar Trade Information service have been kept at Rs. 700 and 180 per year respectively. For Sugar Trade Information Service the subscription is Rs. 120 per year. There are at present 2 members of the Sugar Cable Service, 11 members of the Sugar Postal Service, 21 members of the Sugar Trade Information Service. Although the number of members has remained comparatively low, the services have been found of great value by several

Government Departments, factories, traders and important selling organizations in foreign countries. Apart from their utility to the subscribers, the information collected under these services has been found of great use to the normal working of the Institute and has been often utilised in preparing reports on the progress of Sugar Industry in India and abroad.

Statistical Reviews and Reports.

The collection, collation, and dissemination of statistical information relating to the Sugar Industry and Trade in India and various sugar producing countries and consuming centres of the world constituted an important part of the work done in the Sugar Technologist's office. The work is being continued at the Imperial Institute of Sugar Technology under the guidance and supervision of a well trained and qualified Statistician.

Information regarding export, import and prices for principal Indian and foreign markets and producing countries, area under sugarcane and beet, cost of production of sugar, total *per capita* consumption in various countries of the world, rates of railway freight on sugar, in short every possible information of interest to the Sugar Trade and Industry in India has been collected and recorded. This has been of use to the public as well as the Government. A large number of enquiries received from the public and Government departments relating to these have been answered every year.

A number of statistical notes, memoranda and reviews on the progress of the Sugar Industry and Sugar Trade in India, are published, amongst which mention may be made of the following:—

- (i) The annual review of the Sugar Industry in India.
- (ii) Note on the production of sugar in India direct from cane.
- (iii) Note on the production of sugar refined from gur.
- (iv) First and final forecasts on the production of Sugar from cane and gur.
- (v) Brief notes on monthly exports of sugar from Java.
- (vi) Up-to-date lists of sugar factories and gur refineries working in India, showing their capacities manufacturing processes, makers of machinery, etc., have been compiled and published every year.

The two tables below give respectively the number of such publications since 1931 and the titles of publications for 1936-37.

TABLE II.—Giving number of Statistical publications for each year from 1931.

Year.	No.
1931-32	41—In addition two more articles, viz., (i) Expansion of the Indian Sugar Industry, (ii) Some problems of the Sugar Industry, in India, were published.
1933-34	15
1934-35	18—"Growth of white Sugar Industry in India", published in the "Indian States magazine".
1935-36	15
1936-37	21

TABLE III—*List of notes published in 1936-37.*

(1) Review of the Sugar Industry of India	1
(2) Note on the production of sugar direct from cane	1
(3) Note on the production of sugar refined from gur	1
(4) Forecasts on the production of sugar direct from cane and refined from gur	4
(5) Brief notes on monthly exports of sugar from Java	12
(6) Articles on the progress of the Sugar Industry in India	1
(7) Survey of Technical and Agricultural work on sugarcane abroad	1

Copies of latest issues of some of the above publications are attached.

In addition to the above, the following information has been supplied to Director-General, Commercial Intelligence and Statistics for publication in the "Indian Trade Journal" regularly every year:—

- (1) Brief reviews of the cane crop conditions in different parts of the world for incorporation in the all-India Sugarcane Forecasts.
- (2) Weekly quotations for refining and edible gur in important markets by telegram.
- (3) Weekly figures for stocks of sugar at the major Indian ports together with the first cost quotations for Java white sugar and price quotations for typical Indian factory sugars indicating their maximum and minimum limits in the Cawnpore Sugar Market,

Sugar Production Rules.

The Sugar Production Rules, 1935, framed in accordance with the provisions of Section V of the Sugar Industry (Protection Act), 1932 and the recommendations of the Tariff Board came into force from September, 1935. The work being done in this connection consists in (i) the collection, compilation and distribution in a consolidated form of technical data and commercial statistics relating to the industry, (ii) scrutinising and commenting on the results obtained by individual factories, (iii) giving technical advice whenever necessary, (iv) publishing from time to time such data and information as are considered essential for the development of the Industry, and (v) keeping in a readily available form such information as may be required from time to time by the Government of India on all aspects of the Sugar Industry in India as well as abroad.

A pamphlet (copy enclosed) embodying the above Rules and the forms prescribed together with explanatory notes has been published and distributed to the Indian Sugar Factories and others. The work in connection with these Rules was started soon after their enforcement. During 1935-36, Consolidated Statements of (i) Manufacturing data, (ii) Total price paid for cane and the net price received by the growers, (iii) Sugar Production and Stocks were prepared every month and distributed to the factories submitting returns, to all Local Governments and representative sugar organizations. The first and final forecasts on the production of sugar directly from cane and that refined from gur in India, as also other technical and statistical notes on the progress of the Sugar Industry in India were prepared on the basis of the returns received under the above rules.

During the season 1936-37, the work was continued as in the previous year with a few minor changes. It is noteworthy that although there was considerable opposition from the manufacturers to the introduction of these rules, their usefulness was realised by them after they had been in operation

for only one season and a request was made for more frequent compilation and publication of the information relating to sugar prices and stocks. This was agreed to by Government and accordingly the Consolidated Statement of Sugar Production and Stocks was prepared fortnightly. Arrangements were also made for publishing this statement and the statement relating to sugarcane prices regularly in the "Indian Trade Journal", in order to give them a wider publicity.

The technical and trade statistics collected under the above rules have been of great use in answering technical enquiries and in studying the working of factories and giving technical advice. A new form relating to machinery equipment is being prescribed from the next season and with this additional information it is expected that this scheme of mutual control will become almost complete.

Employment Bureau.

The employment of suitably qualified technical men is essential for the proper and efficient working of a sugar factory. With the object of helping the factory owners in securing the services of good and efficient staff a register containing the names and particulars of qualifications of candidates seeking employment in sugar factories is maintained by this office. Names of suitable candidates are recommended in response to enquiries received from factories. The Bureau has been able to assist a large number of factories every year in engaging technical staff.

List of Annexures.

- (1) Scientific Monograph No. 3—June, 1932,—the Imperial Council of Agricultural Research.—The Open Pan System of White Sugar Manufacture, by R. C. Srivastava, B.Sc.
- (2) "Facilities for the Sugar Industry" provided by the Sugar Technologist, Imperial Council of Agricultural Research, India.
- (3) (a) The Indian Sugar Standards, by R. C. Srivastava, B.Sc.
 (b) Review of the quality of Sugar manufactured in India, by Central Sugar Factories and Refineries, during the season 1935-36.
 (c) Review of the quality of Sugar manufactured in India, by Central Sugar Factories and Refineries, during the season 1936-37, by R. C. Srivastava, B.Sc., Director, Imperial Institute of Sugar Technology, Cawnpore.
- (4) Statistical Notes published in 1936-37:—
 (a) Review of the Sugar Industry of India, during the official year 1935-36.
 (b) Note on the production of sugar direct from cane (1935-36).
 (c) Note on the production of sugar refined from gur 1936.
 (d) First Memorandum on the production of Sugar refined from gur in India, during 1937.
 (e) Sugar Production Forecast (All-India).—First Memorandum on the production of sugar directly from cane in modern factories in India, during the season 1936-37.
 (f) Sugar Production Forecast (All-India).—Second Memorandum on the production of sugar directly from cane in modern factories in India, during the season 1936-37.
 (g) Note on the Export of sugar from Java, during the month of March, 1937.
- (5) (a) "Sugar Production Rules, 1935," with Explanatory Notes by R. C. Srivastava, B.Sc.
 (b) Notification No. F. 29-IX/36-A, dated the 20th November, 1936, Imperial Council of Agricultural Research. Amendment to the Sugar Production Rules, 1935.

(c) Imperial Council of Agricultural Research, India, Sugar Production Rules, 1935. Consolidated statement of monthly manufacturing data from "Central Sugar Factories" in India, for the month of March, 1937. Season 1936-37.

(d) Consolidated monthly statements showing—

- (i) the total juice paid for cane delivered at the factory by Central Sugar Factories, and
- (ii) the portion thereof actually received by the grower for March, 1937, season 1936-37.

(e) Consolidated statement of Sugar Production and Stocks for Central Sugar Factories for the fortnight ending the 15th March, 1937, with supplement.

NOTE.

EXPORTS OF SUGAR FROM JAVA, DURING MARCH, 1937.

According to the figures issued by the "Centraal Kantoor Voor de Statistiek", Weltevreden, the exports of different assortments of sugar from Java, during the month of March, 1937, amounted to 105,396 metric tons as against 62,985 tons during the same time last year. The respective quantities of the different assortments shipped were as under:—

Assortments.	Total for 11 months May 1936 to March 1937.	
	Tons.	Tons.
Superior Head Sugar	61,425	502,258
Refined	1,439	16,005
Head Sugar 16 D.S. and Higher	42,501	377,499
Mascovadoss . . . . .	...	7
Molasses sugar	31	32,499
Centrifugalled bag sugar . . . . .	...	...
	<hr/> 105,396	<hr/> 928,268

Out of the above total shipments during the month of March, 1937, 20,724 metric tons went to destinations west of Suez as against ... tons during the month of March, 1936. British India took 4,071 metric tons during the month of March, 1937, as against 4,504 tons during the corresponding month of 1936. Hongkong and China between themselves took 26,295 metric tons during the month of March, 1937, as against 13,414 tons during the same month last year, while Japan decreased her imports of Java sugar from 19,019 metric tons during the month of March, 1936 to 15,487 tons during the month of March, 1937.

The table attached gives the details of exports during the month of March, 1937, as compared with the corresponding month of 1936.

TABLE.

Java Sugar Export during March, 1937, tons of 1,000 K. G. nett from figures issued by the "Centraal Kantoor V/d Statistiek" Weltevreden.

Destinations.	March 1937.	Total for 11 months May 1936 —March 1937.	March 1936.	Total for 11 months, May 1935 —March 1936.
Holland	7,650	18,247	..	229
Do. f. o.	250	250	..	..
England f. o. . . . .	..	150	..	1
Germany . . . . .	..	3,749	..	150
France	279	153	..	..
Do.	153	..	..	..
Port Said, Alexandria, etc., f. o. .	11,751	96,901	..	5,367
America (East Coast)	641	2,783	..	..
Do. (West Coast) . . . . .	..	408	..	20
Total (West of Suez)	20,724	122,641	..	5,767
Arabia	621	9,404	..	1,443
Aden	96	12,505	406	7,416
Mesopotamia	813	7,417	..	2,729
Somaliland . . . . .	..	51	..	855
British East Africa	634	4,000	152	2,814
Portuguese East Africa	197	1,238	45	635
Union of South Africa	25	50	..	..
Mauritius	101	404	56	119
Ceylon (Colombo)	5,491	65,255	7,424	66,638
British India	4,071	44,292	4,504	199,577
Siam	4,434	31,552	1,901	30,773
British Malaya . . . . .	..	30	4	470
Penang	2,258	23,862	2,343	22,880
Singapore	5,873	61,165	4,845	54,560
French Indo-China . . . . .	..	2,686	761	2,849
Hongkong	18,296	189,138	12,001	122,198
China	7,999	53,986	1,413	33,124
Formosa . . . . .	..	505	..	3,337
Dairen (Dalny)	6,256	39,394	4,126	12,657
Korea	4,002	30,723	3,952	25,018
Japan	15,487	151,942	19,019	158,077
British North Borneo . . . . .	..	144	..	180
Sarawak . . . . .	..	..	5	60
Portuguese Timor . . . . .	..	16	..	3
Australia	40	355	15	181
New Zealand	7,794	74,380	..	40,002
Polynesia	184	1,131	13	908
Brunei . . . . .	..	..	..	20
Elsewhere . . . . .	..	2	..	..
Total	105,396	928,268	62,985	795,290

Stocks of all grades of sugar in the ports of Java, on the 1st April, 1937, were estimated at 259,642 metric tons as against 957,687 metric tons at the same time last year.

(3) Letter, dated the 15th May, 1937, from the Tariff Board to Mr. R. O. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.

The Board is anxious to know the present position of the Sugar Industry in Java and Japan (including Formosa) and would like to have any informa-

tion relating to the cost of production of sugarcane and its internal selling prices in those countries. I shall be obliged if you could kindly send me any publication on the subject for reference which you may have in your library. It will be returned when the enquiry is over.

(4) *Letter, dated the 31st May, 1937, from the Director, Imperial Institute of Sugar Technology, Cawnpore.*

With reference to your letter, dated the 15th May, 1937, I give below the information asked for therein as far as available in this office. The information has been supplied to this office by one of our foreign correspondent:—

JAVA—

Present selling price of sugar Inland—Retail price 8.50 cents per Kilo.

Export.

The latest export sales of the Nivas were made at the following prices:—

	Superior. (Florins per 100 Kilos.)	Brown Sugar. (Florins per 100 Kilos.)
Singapore	6.35—6.45	6.30—6.35
Penang	6.30—6.35	6.20—6.25
Hongkong	6.05—6.10	...
China	5.95—6.00	5.80—5.85
Aden	5.70	...
West of Suez	4.90	...
India—		
West Coast	5.675—5.725	...
East Coast	5.725—5.775	...
Bangkok	5.425—5.475	...
Netherlands	4.75	...
Port Said	4.75	...

Production Costs.

According to the latest data at hand (November, 1935) the production costs of sugar vary widely. In 1935, they were calculated at 3.75—4.50 florins per 100 Kilos, costs of amortisation excluded.

JAPAN—

Present selling price: Inland— Retail price 0.34 Yen per Kilo.

Production Costs.

Average production costs per picul (60 Kilos) of sugar produced in modern Formosan Sugar Mills during the crop year 1932-33 amounted to Yen 7.06.

Information regarding cost of production of sugarcane is not available. Mr. M. P. Gandhi in his 1936 Annual, page 59, states that the price of cane in Java is about 2 to 2½ annas per maund. I am enquiring from him as to the source of his information and whether he can give latest information for Java and other countries for cost of production of cane.

(5) *Letter, dated the 22nd June, 1937, from the Tariff Board to Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

I am desired to enquire if you can supply any information as to the countries which manufacture and use power alcohol from molasses and can direct me to any literature on that subject.

2. I understand that molasses can also be converted into certain chemicals like acetic acid, acetates and acetone which are of considerable commercial importance. Are any of these articles manufactured in India and, if so, at what places? I shall be obliged if you can refer me to any literature on that subject also.

(6) *Letter, dated the 26th August, 1937, from Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

Kindly refer to your letter, dated the 22nd June, 1937. I am enclosing six copies of a note on "The Production of Acetic Acid from Molasses", the receipt of which please acknowledge.

A note on the production and use of power alcohol from molasses is under preparation and will be sent to you shortly.

Enclosure.

NOTE REGARDING PRODUCTION OF ACETIC ACID FROM MOLASSES.

There are three principal methods for the manufacture of acetic acid:—

- (1) By the carbonisation or destructive distillation of wood,
- (2) By catalytic synthesis, and
- (3) By fermentation of molasses or other saccharine products.*

* In the dry distillation of wood method, acetic acid present in the crude distillate, which is known as pyroligneous acid. This acid contains besides acetic acid varying quantities of methyl alcohol and tarry matters. The amount of acetic acid present in the pyroligneous acid may be about 8-9 per cent. The crude pyroligneous acid is distilled and acetic acid vapours mixed with steam are condensed and finally neutralised with lime to produce calcium acetate. The solution of calcium acetate is then evaporated to dryness, treated with equivalent proportion of hydrochloric acid(1) or sulphuric acid(2) and distilled when acetic acid (70-80 per cent.) is obtained leaving a residue of tar and calcium chloride or sulphate.

Concentration of acetic acid(3).—The last few years have witnessed a revolution in the process of separating acetic acid from the products of carbonisation of wood and numerous patents have been taken out for the direct distillation of pyroligneous acid and elimination of the intermediate stage of acetate of lime and the final concentration of acetic acid in the distillate. Suida(4) passes the vapours at the base of an extraction column where it meets with a solution, not readily soluble in water consisting of the lighter fraction of the wood tar distillate. It absorbs acetic acid which may be separated by subsequent distillation. Other solvents used for extracting acetic acid are petroleum distillate (e.g., spindle oil)(5), amyl acetate(6) trichlorethylene(7) ethyl acetate(8). The concentration is also effected by freezing(9). On chilling dilute acetic acid at -26° acetic acid separates as ice crystals. Concentration by adsorption in activated carbon at $120-30^{\circ}$ and liberation at 200° (10) is also mentioned.

(2) *Synthetic acetic acid* has been manufactured by catalytic hydration of acetylene in presence of mercury, ferric and vanadium salts(11). The intermediate product is acetaldehyde. Synthetic acetic acid has also been manufactured from methane and oxides of carbon at 500° in presence of a nickel catalyst(12).

(3) *Fermentation processes*.—Some of the processes described for the concentration of dilute acetic acid have been applied to acetic acid produced

The main bulk of acetic acid produced in other parts of the world is from wood. Synthetic processes have also been becoming popular recently. The position of India is, however, unique in that considerable quantities of molasses are produced every year, a large portion of which is going to waste. As the price of molasses has gone down as low as an anna per maund, there are possibilities of acetic acid produced by the fermentation process competing successfully with acetic acid produced by the destructive distillation of wood.

COST OF PRODUCTION OF ACETIC ACID.

The following calculations show the manufacturing cost of a lb. of glacial acetic acid by the wood distillation and fermentation processes taking the price of molasses at As. 4 per maund. It should be pointed out, however, that as no acetic acid has actually been manufactured from molasses so far, the latter calculations are based on assumed data:—

(a) *Calculation of the cost of production of acetic acid from wood distillation for a factory producing 1,936 lbs. of acetic acid (99-100 per cent.) per day.*

	Rs. A.
(1) 30 tons of prepared wood at 5 maunds per rupee	163 0
(2) Cost of coal for distillation, 2½ tons at Rs. 14 per ton	31 4
(Pyroligneous acid produced 26,880 lbs. containing 2,285 lbs. of acetic acid.)	
(3) Cost of lime required for neutralising crude acetic acid 1,066 lbs. at As. 12 per maund	9 12
(Calcium acetate (80 per cent.) produced—352 lbs.)	
(4) Cost of steam for distilling, Pyroligneous acid and evaporating calcium acetate solution after neutralising at 10 lbs. of steam per lb. of calcium acetate produced (95 per cent.)	47 2
(5) Cost of sulphuric acid required 1,960 lbs. at As. 1-6 per lb.	183 12
(6) Cost of steam for distilling off acetic acid at 6 lbs. per lb. of acetic acid produced 5·2 tons at Rs. 3 per ton	15 10
(7) Cost of rectification at 2 pies per lb. of acetic acid	20 2

by acetic fermentation of molasses. Acetic acid may be produced from molasses by *mycoderma aceti*, consisting of two stages, viz., preliminary transformation of the sugars in molasses to alcohol by the agency of yeast and subsequent oxidation of alcohol to acetic acid by *mycoderma aceti*. G. Mazzadrola(13) mentions that sterile beet juice containing 10 per cent. sugar can be fermented with a pure culture of *B. Lacti* obtained from sour milk at 36-38° C. giving both acetic and lactic acids. Under properly controlled conditions it is possible to obtain acetic acid directly to the extent of 40-50 per cent. acetic acid, 10-20 per cent. ethyl alcohol and 3-2 per cent. acetone. The use of a new species of bacteria of this type *Lactobacillus acidophilus* derived from milk is claimed by the Soc. Anon. destilleries des Deux-Severes.(14).

	Rs. A.
(8) Interest and amortisation charge per day at 15 per cent. on Rs. 1,00,000 working 360 days per year	42 0
(9) Overhead and labour charges per day	40 0
Total	552 10
Deduct the price of $7\frac{1}{2}$ tons of charcoal at Rs. 18 per ton	135 0
Net cost of 1,936 lbs. of acetic acid	417 10

Cost per lb.=3'45 annas.

- (b) *Calculation of the cost of production of acetic acid (99-100 per cent.) for a factory producing 2,000 lbs. of acid per day from the fermentation of molasses.*

Assumed yield—300 lbs. of pure acetic acid per ton of molasses.*

	Rs. A.
(1) 1 ton of molasses at As. 4 per maund	6 13
(2) Fermentation charges (chemicals, water aeration, etc.)	3 8
(3) Cost of steam (for distilling the fermented wash and evaporation of calcium acetate solution after neutralisation with lime) at 10 lbs. steam per lb. of calcium acetate (545 lbs.) and Rs. 3 per ton of steam	7 3
[Wash 1,1000 gallons, distillate 1,000 gallons, crude Ca acetate formed 545 lbs. (80 per cent.)]	
(4) Cost of lime 163 lbs. at As. 12 per maund	1 8
(5) Cost of H_2SO_4 302 lbs. (95 per cent.) at As. 1-6 per lb.	28 5
(6) Cost of steam required for distilling out acetic acid at 6 lbs. per lb. of acetic acid $6 \times 300 = 1,800$ lbs. at Rs. 3	2 7
(7) Cost of rectification at 2 pies per lb. of acid	3 2
(8) Total cost of materials for 300 lbs of acetic acid	52 14

or 53 0

Therefore cost of material for 2,000 lbs. of acetic acid	353 5
Interest and amortisation charge per day on a capital of Rs. 60,000 at 15 per cent. working 300 days in the year	30 0
Overhead charges and labour per day	40 0

Total cost of 2,000 lbs. of acetic acid 423 5

Cost per lb.=3'38 annas.

* Theoretical yield 584 lbs. Practical yield assumed 50 per cent. approximately.

(c) *Calculation of the cost of production of acetic acid (99-100 per cent.) for a factory producing 1,936 lbs. of acetic acid per day from molasses fermentation using the Usine de Melle process of direct distillation of wash.*

	Rs. A.
6.45 tons of molasses at As. 4 per maund	43 15
Total fermentation charges at Rs. 3-8 per ton molasses	22 12
Cost of steam, solvent, entraining liquid nitrogen, labour and overhead charges	95 9
Amortisation and interest on Rs. 1,30,000 (Rs. 1,20,000 for the concentration apparatus and Rs. 10,000 for the fermentation apparatus) at 15 per cent. working days 300 in the year	65 0
	<hr/> 227 4 <hr/>

Cost per lb. = 1.88 annas.

From the above figures it can be judged that the cost of manufacture of acetic acid from molasses by the fermentation process comes to As. 3.38 per lb. taking molasses at As. 4 per maund as compared with wood distillation process, where the cost of manufacture of acetic acid per lb. works out to 3.45 annas. There are sufficient room for the reduction in the manufacturing cost by the concentration method (1.88 annas per lb.).

Imports of acetic acid and its products.

The following table (15) shows the quantity and value of acetic acid and acetates imported into India each year from 1931-32 to 1935-36:—



	Quantity.					Value.				
	1931-32	1932-33	1933-34	1934-35	1935-36	1931-32	1932-33	1933-34	1934-35	1935-36
	Cwt.	Cwt.	Cwt.	Cwt.	Cwt.	Rs.	Rs.	Rs.	Rs.	Rs.
Acetic acid (Pyroligneous) .	4,266	2,751	4,030	5,098	5,749	1,08,068	83,728	1,30,054	1,68,283	1,69,421
Lead acetates . . .	3,391	2,371	2,097	2,204	1,621	63,063	60,124	47,193	49,629	34,666
White Lead, genuine dry .	5,009	8,443	11,501	11,732	12,665	1,19,436	1,82,852	2,22,547	2,26,160	2,55,402
White Lead, reduced dry .	44	674	30	56	911	1,217	8,523	767	1,640	14,387
White Lead, genuine moist .	2,310	3,204	3,578	2,619	3,084	60,019	71,378	79,381	54,971	64,348
White Lead, reduced moist .	2,004	1,616	766	1,543	1,117	54,325	41,665	17,840	34,774	26,274

Taking the figures for 1935-36 the total value of acetic acid and acetates imported was Rs. 5,64,498 or approximately Rs. 6 lakhs.

Use of acetic acid in the Rayon Industry.

The consumption of acetic acid should increase considerably with the introduction of the Rayon Industry in India, which requires large quantities of acetic acid, acetone and acetic anhydride for the cellulose acetate process. Acetone and acetic anhydride can be manufactured from the same base, acetic acid.

The following figures show the proportion of Rayon plants in the world worked by various processes (16):—

	Per cent.
Viscose plants	77.0
Acetate plants	13.0
Nitro plants	2.7
Cupra plants	7.1

The tendency at present is for increasing adoption of the viscose process although the British and American manufacturers favour the acetate process.

In the table below are given figures for world production of Rayon in 1,000 lbs. in the years 1935, 1934 and 1930 by different processes. (17)

	1935.	1934.	1930.
United States of America	256,659	210,330	126,805
Japan	215,000	153,100	36,600
Italy	120,000	88,900	47,000
Other countries	226,280	238,640	173,580
	<hr/> 969,730	<hr/> 775,120	<hr/> 450,285

For the viscose process the three main chemicals required are caustic soda, carbon bisulphide, and sulphuric acid. For the acetate process the principal chemicals are acetic acid, acetone and acetic anhydride. For the viscose process it may be possible to manufacture caustic soda locally from Indian materials but for the other two chemicals we have to depend entirely on foreign sulphur.

For the acetate process as mentioned before all the chemicals may be manufactured from the raw material molasses which is available in India.

The following are the London prices (quotation dated 24th June, 1936) of these chemicals:—

- Caustic soda—£14 per ton.
- Carbon disulphide—£31 per ton.
- Sulphuric acid—£4-4-10 per ton.
- Acetic acid—£54 per ton.
- Acetic anhydride—£93 per ton.
- Acetone—£54-56 per ton.

The cost of the acetate process is said to be 1½-2 times that of the Viscose process. This is due as can be seen from the relative figures to the high cost of the chemicals used. Thus the price of acetic acid at £54 per ton comes to over 5 annas per lb. The costs of production per lb. of

artificial silk in Germany in 1929(18) by the Viscose and acetate processes are as follows :—

	Viscose.	Acetate.
	Marks.	Marks.
Sale price	10.27	18.55
Cost of production	6.75	12.86
Cost of marketing	0.68	1.29
Profit	2.84	4.40

As the price of molasses has gone down to one to one and a half anna per maund the cost of production of all the three chemicals, acetic acid, acetone and acetic anhydride will naturally be reduced considerably, thus making the acetate process more economical and acceptable to the manufacturers. An examination of the physical, biological and dyeing properties of artificial silk made by the Viscose and Acetate processes reveals that acetate silk is on the whole better than Viscose silk although it may have some minor defects.

	Acetate.	Viscose.	REMARKS.
Average moisture content (Relative humidity at 55°C).	4.7	11.3	Acetate is better. This is a significant factor in relation to tensile strength.
Specific Gravity	1.33	1.55	Natural silk 1.23 Acetate better.
Tensile strength	65—70	45—55	Natural silk 75—85.
Ductility { Wet { Dry	33.9 19.9	29.6 16.8	Elongation not desirable, viscose slightly better. Excessive.

Acetate yarns possess special resistance to sea water and tropical conditions as well as micro-organism. Cellulose acetate yarns are stated to be little affected by perspiration and are comparatively more hygienic than cotton.

Dyeing properties are nearly the same for both Viscose and Acetate Rayons.

VINEGAR INDUSTRY.

Besides the consumption of molasses for the manufacture of glacial acetic acid for the Rayon Industry and acetates, there are possibilities of consumption of a considerable amount in vinegar manufacture for use as edible vinegar and for canning and pickling purposes. It is estimated that the production of Khandsari molasses in India during 1936-37 was 125,000 tons. The Khandsari molasses is suitable for this purpose as unlike factory molasses, it is free from dark coloured decomposition products present in the latter due to the presence of calcium salts.

2. As regards the query as to whether acetic acid and acetates are manufactured in India, it is not known whether they are made even by the wood distillation process. The Bhadravati Iron Works are said to have utilised part of their tar obtained by the destructive distillation of wood for the production of carbon for their iron works and distilled the same for the manufacture of calcium acetate and methyl alcohol but it is not definitely known whether the calcium acetate was at all used for the manufacture of acetic acid.

Literature consulted.

- (1) U.S.P. 1338040, 1919.
 - (2) U.S.P. 1381782, 1921.
 - (3) Thorpe's Dictionary of Applied Chemistry, Suppl. Vol. 1, p. 12.
 - (4) B.P. 218271-2, 1924, F.P. 594925, 1925.
 - (5) Br. Cellulose and Chemical Manufacturing Co., B.P. 204196, 1922.
 - (6) B.P. 296974, 1928.
 - (7) I.G. Farbenindustrie A-G B.P. 300923, 1930.
 - (8) B.P. 298137, 1928.
 - (9) I.G. Farbenindustrie A-G B.P. 312173, 1929.
 - (10) Imperial Chemical Industries, Ltd., and F.P. Liester B.P. 332983, 1929.
 - (11) B.P. 124194, 1919.
 - (12) B.P. 226248, 1923.
 - (13) I.S.J. 1917, 571-72.
 - (14) B.P. 316237, 1929.
 - (15) Annual Statement of the Sea-Borne Trade of British India, 1937, Publication pp. 62, 71, 301 and 302.
 - (16) & (17) Rayon World, Feb., 1936.
 - (18) Textileberichte, 1929.
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- (7) *Note on the Power Alcohol forwarded by Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

Since the beginning of the present century and specially since the Great War a great deal of interest has been shown in power alcohol in many countries, particularly those not possessing their own petroleum resources. Several factors have contributed to the development and use of alcohol as a motor fuel in these countries. In some the objective has been to provide additional outlet for potatoes and in other for molasses, beet-roots and grains. The use of power alcohol has also been supported by nationalistic arguments as to the need for being more independent of foreign supplies of petrol. The appeal for alcohol has been an appeal for using home-made products. Practically in all cases the price of petrol is high which tends to encourage its substitution by cheaper alcohol for use as a motor fuel.

During recent years the Indian Sugar Industry has been faced with the serious problem of disposal of surplus molasses. This is seriously hampering the stability of the Sugar Industry; is creating a public nuisance in the vicinity of the sugar factories; and is a great economic loss to the country as a whole. The total production of factory molasses in India during the season 1936-37 is estimated to be 425,000 tons representing 406,000 tons from cane sugar factories and 19,000 tons from gur refineries. The share of United Provinces in the above total quantity is 221,600 tons. It is obvious, therefore, that the molasses problem is particularly troublesome in United Provinces, which produces over 51.4 per cent. of the total production of factory molasses in the whole of India.

A more important point for consideration is to form an estimate of that portion of the total production of molasses which is an actual surplus in India and which may be available for purposes of export or for directing into new channels of utilisation. For making such an estimate of the surplus quantity, allowance has to be made for molasses required for normal consumption, before the recent increase in production—such as tobacco curing and distillation. Actual figures for the normal consumption of molasses in India are not readily available. Some idea of this can, however, be formed by taking the average production of molasses in India during the 5 years preceding the Great War *plus* the average import of molasses for the same period. This comes to 80,000 tons and 93,000 tons respectively.

By deducting these approximate figures for the normal consumption of molasses from the present total production figures, we are left only with an actual surplus of about 252,000 tons of molasses which has to be disposed off.

It may be pointed out, however, that the above quantity of the surplus molasses for India may be an over-estimate in view of the fact that, as a result of much lower prices, the consumption of this commodity must have increased at the present time in comparison with the pre-war period, which has been taken in the above calculations. Besides, the figures for production and consumption of Khandsari molasses had not been taken into consideration in the above estimate, due to the fact that practically the whole of the production is utilised locally at the manufacturing centres for edible purposes either as such or in the form of cheap gur.

A Molasses Exporting Company has recently been formed in India for purchasing and exporting molasses to other countries. The price which this company can pay for molasses will naturally depend on the cost of transportation and the prices ruling in the various foreign markets. While this company may be able to make purchases from sugar factories situated near the port towns, it is not likely to take any appreciable quantities from those located in the interior. It may be pointed out that the total export of molasses from India by this company during the last two years has been negligible. Molasses though regarded by many as a waste product at present, represents so much potential wealth to the country and its sale at the low prices which the exporting company has been paying means a loss of that wealth. Its proper utilization in the country itself can save this loss.

That molasses is the cheapest and the best raw material for the manufacture of alcohol is a universally recognised fact. It presents many advantages on account of the fact that the sugar present in the molasses is in a readily fermentable form and consequently it does not require any of the preliminary treatments which are necessary in the case of potatoes, grains, corns and other starchy materials used in some parts of the world.

The use of absolute alcohol, specially in admixture with petrol, as a carburant for motor-cars is now well-known. Such mixtures are also recognised to be better motor-fuels than pure petrol. There are no technical difficulties in producing absolute alcohol as there are at least two or three well-known processes in use in the different countries. The plants required for these processes have also been standardised and it is no more difficult to operate them than to operate ordinary Coffey's stills for low strength alcohol.

The most important point for consideration in connection with the use of alcohol as a motor-fuel is its cost of production in India. The cost of production of one gallon of rectified spirit and of absolute alcohol from a distillery producing 70 H.L. per day will be as follows under Indian conditions—taking the cost of molasses at As. 4 per maund delivered at the distillery—

	Per gallon.
	As. P.
(1) Capital expenditure, i.e., Rs. 2,00,000 to be redeemed in 15 years	0 6·4
(2) Cost of molasses	1 10
(3) Consumption of steam	0 9·6
(4) Chemical products	0 3
(5) Labour and staff	0 6
(6) Over-head expenses	0 4
	<hr/> 4 3

(Annas four and pies three only.)

Estimated cost of production of absolute alcohol.

	Per gallon.
	As. P.
(1) Cost of rectified spirit	4 3-0
(2) Consumption of steam	0 3-12
(3) Loss of alcohol	0 0-08
(4) Extra capital expenditure to be redeemed in 15 years, i.e., per gallon	0 2-1
(5) Loss of entraining liquid	0 0-28
(6) Staff	0 0-20
(7) Royalty	0 5-5
	<hr/>
	5 2-28
	<hr/>

or say, annas five and pies three only.

If the distillery be an independent unit having no connection with the sugar factory—

	As. P.
The increased capital expenditure by making the distillery independent of the factory	0 2-4
	<hr/>
	5 4-68
	<hr/>

or say, annas five and pies six only.

It may be pointed out that absolute alcohol (Power Alcohol) can also be produced directly from fermented wash without the intermediate stage of rectifying alcohol by the fourth technique of the Melle Process. The cost of obtaining a gallon of absolute alcohol by this method is estimated at As. 4-6, the same as for rectified spirit.

It would not be out of place to mention the assistance which is given in some of the more important countries in the form of legislation of otherwise by Government in the development and use of power alcohol (absolute alcohol):—

(1) *Brazil*.—Petrol companies are required by law to purchase power alcohol equivalent to 5 per cent. of their petrol imports.

(2) *Austria*.—(i) The law provides that mixing shall be compulsory, if the duty paid price of petrol exceeds the price of alcohol.

(ii) The petrol cartel takes over the alcohol from the state alcohol board and arranges disposal.

(3) *Czechoslovakia*.—The addition of 20-25 per cent. of alcohol to motor-fuel is compulsory and 98.5 per cent. of the petrol sold is this mixture. The amount of alcohol so used is about 11 million gallons.

(4) *France*.—Importers of petrol are under a legal obligation to take from Government a quantity of alcohol equivalent to 8-10 per cent. of their petrol imports.

(5) *Germany*.—The oil importers and indigenous producers are required to purchase from the alcohol monopoly a quantity of power alcohol corresponding to 10 per cent. by weight of their imports of petrol and Benzol plus 60 per cent. of their imports and/or production of kerosene at control price of £15 per ton. The amount of alcohol taken over is estimated at 42 million gallons. The mixtures permitted range from 10 per cent. to 30 per cent. alcohol.

(6) *Hungary*.—Petrol over 0.735 Specific Gravity must be mixed with 20 per cent. alcohol (unless used for agricultural purposes) and the duty

on this mixture is 4*a.* per gallon less than on light petrol (below 0.735 Specific Gravity).

(7) *Latvia*.—The mixture 25 per cent. alcohol and 75 per cent. petrol is compulsory. The alcohol is a state monopoly.

(8) *Yugoslavia*.—The mixture 80 per cent. and 20 per cent. alcohol is compulsory except for aeroplanes.

(9) *Sweden*.—There is no legal regulation, but power alcohol is free of all duty. The quantity power alcohol used is 2 million gallons.

(10) *Italy*.—There is no duty on power alcohol. A definite allocation of the total production of alcohol is made to the motor industry, 2½ million gallons are used annually.

(11) *Greece*.—It is proposed to standardise a mixture of 78 per cent. petrol, 22 per cent. alcohol, but also to permit the use of unmixed petrol.

It would be seen that in most of the countries it has been made compulsory to mix alcohol with petrol, while in some it is a state monopoly, and in others no excise duty is levied on power alcohol. A few countries, however, have developed the use of power alcohol without any Government protection or special legislation but solely on its own merits (such as the Philippines, Sweden, and England, etc.).

Particulars of alcohol production in 19 countries are given in Table I. An examination of this shows that molasses is used as one of the raw materials in all these countries. Other raw materials are also used in some of the countries, such as beet-roots (in France and Czechoslovakia) potatoes and other amylaceous materials (in Germany and some other countries). Some countries, chiefly Sweden, obtain alcohol by the treatment of cellulosic industrial products, such as sulphite liquors from the manufacture of wood pulp.

Arranged in the order of importance as producers of alcohol the most important countries are France, Germany, United States of America, Czechoslovakia and Great Britain.

Details of the consumption of alcohol in different countries for various purposes are shown in Table II. It will be observed that the industrial uses are the most important, the largest quantities being used for heating, lighting and carburation. The figures for quantities used for carburation in France, Germany and Czechoslovakia are significant as showing the result of the policy followed by their respective Governments for developing the use of alcohol as a carburant.

The commercial names and compositions of the mixtures which have either been made compulsory for the disposal of alcohol or which, although not compulsory, are most commonly used in certain countries, are given in Table III.

It is obvious from what has been stated already that there should be no technical difficulty in producing or using alcohol-petrol blends as motor-fuel in India. Experience in other countries has shown that the most suitable blend is an alcohol-petrol mixture in the proportion of 20:80. The present consumption of petrol in India is estimated to be about 80 million gallons. The biggest consumption of petrol is in or near the port towns. Petrol also sells cheapest in port towns owing to saving in railway freight. Most of the sugar factories in India are situated at a distance from the ports and hence either molasses or alcohol will have to be transported to port areas if alcohol is to be used in admixture with petrol. The freight charges in this case would probably be prohibitive. Furthermore, with the arrangement which the Indian Molasses Company is making for exporting molasses the production of molasses in areas which are nearest to the ports, is likely to be exported first, and hence the difficulty in the disposal of molasses by these factories may be less than in the case of factories in the interior.

Taking everything into consideration, it appears that an all-India scheme for the compulsory use of alcohol-petrol motor-fuel would be premature

at this stage. There will be better chances of success of the scheme if it is restricted in the beginning to some well-defined areas in the interior. The United Provinces appears to be the most suitable area in several respects. It is at a distance from all important ports with the result that the price of petrol is high throughout the province. It is believed to be between Rs. 1-8 and Rs. 1-10 per gallon. This province produces over 60 per cent. of the total production of molasses in India. The over-production of molasses and the consequent difficulties in its disposal are, therefore, felt in the most acute form in this area. As a result there are better chances of getting molasses at a cheap rate for distilleries here. It is estimated that the total consumption of petrol in the areas that can be served by the United Provinces exceeds 15 million gallons. This would take up about 3 million gallons of absolute alcohol for purposes of mixing with petrol.

It may be mentioned here that an English firm—The British Improved Motor Spirit "Holdings", Ltd.—has recently developed a motor-fuel which takes up 70 per cent. rectified spirit, 3 per cent. Benzol, and the balance of a petrol extract, obtained by a narrow cut fraction from Petroleum Spirit. The chances for the development of such a fuel are much greater in the United Provinces than those of an alcohol-petrol blend. The advantages are to be found in the larger quantities of alcohol and consequently of molasses that can be utilised in a given area and the cost of production of such a fuel is bound to be lower than the alcohol-petrol blend. If the above fuel is developed in the United Provinces it would be possible to consume about 10 million gallons of alcohol per year for motor-fuel purposes.

Since in most of the countries, where alcohol is used for motor-fuel purposes, it is given financial assistance in some form or other by the Government of the country, apprehension is naturally felt that if alcohol-petrol motor-fuel is adopted in India it will either involve loss of revenue or will need financial support from Government. An analysis of the available data, however, shows that in areas not too close to the ports this need not be the case and on the contrary there should be a fair margin of profit on alcohol production. The explanation for this is to be found in the low prices of molasses and the high prices of petrol (including freight charges) obtaining in several important areas remote from the ports.

If it is decided to develop the power alcohol industry in India, attention will have to be given to the following points:—

- (1) The distilleries should be outside the range of the activities of the Molasses Exporting Company.
- (2) They should be in close proximity of the sugar factories and should preferably be attached to sugar factories.
- (3) They should be in areas where petrol prices are high.
- (4) In granting licences to distilleries, preference should be given to those working in conjunction with sugar factories.
- (5) Suitable denaturants for use in power alcohol should be approved. For this purpose the use of 0.25 per cent. crotonaldehyde and 3 per cent. benzol or petrol are recommended.

References.

- (1) The principles of motor-fuel preparation and application by Alfred W. Nash.
- (2) Utilization of Bye-products of the sugar industry by H. S. Chaturvedi, M.S. (La.).
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- (4) Use of alcohol from Farm product in motor-fuel by the Department of Agriculture—Washington.

- (5) Alcohol fuels for use in Internal combustion engines by J. G. King (Journal of Institute of Petroleum Technologists, Vol. 15, p. 350, 1929).
- (6) The world progress of the power alcohol industry by H. Boss. (International Sugar Journal, Vol. 34, pp. 26 and 28, 1932).
- (7) Alcohol motor-fuels on the British Market (Petroleum Times, Sep. 9, 1937).
- (8) Tests with motor-fuels by A. L. Theodore (The Philippines Agriculturist, No. 10, p. 720, 1934).
- (9) Alcohol and alcohol-petrol mixtures as motor-fuels by R. Avica (Inter. Sugar Jour., Vol. 36, p. 341, 1934).
- (10) Alcohol-gasoline motor-fuels by H. I. Shoemaker (Sugar News, No. 10, p. 679, 1932).
- (11) Alcohol production for motor-fuels in the United States of America by D. H. Killeffer (Jour. Ind. Eng. Chem., pp. 117-119, 1933).
- (12) Alcohol and alcohol-gasoline mixtures as automobile fuels by A. L. Theodore (Facts about Sugar, Vol. 31, p. 229, 1936).
- (13) Comparative performance of alcohol and kerosene as tractor fuel by A. B. Catamboy (Facts about Sugar, Vol. 31, p. 473, 1936).
- (14) Motor alcohol by Cuban Sugar Experiment Station (Facts about Sugar, Vol. 31, p. 30, 1936).



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TABLE I.—*Alcohol Production in Different Countries (given in hectolitres at 100° Gay-Lussac).*

(1 hectolitre = 220 gallons.)

Countries.	Years.	Fruits and wines.	Beet-roots.	Molasses.	Potatoes.	Cereals or other materials.	Various yeasts and synthetic.	Total.
Austria	1932	76,575	..	135,460	..	..	62,630	198,095
Belgium	1932	..	..	89,300	..	17,900	59,600	166,800
Bulgaria	..	..	..	9,730	..	..	..	..
Czechoslovakia	1933	10,300	54,000	250,000	506,000	85,000	63,000	968,200
Denmark	1932	..	..	18,942	14,682	35,123	6,530	76,279
England	1932	..	..	500,000	..	212,200	26,000	738,000
Estonia	1933	..	..	..	31,000	23,514	861	32,375
France	1932-33	949,896	2,446,892	830,278	..	23,167	11,888	4,262,121
Germany	1932	..	..	726,572	2,021,376	..	241,733	2,989,681
Hungary	1929	..	..	140,000	280,000	..	..	420,000
Jugoslavia	1931	..	..	118,000	31,900	..	..	140,300
Latvia	1933	..	..	8,200	46,200	..	..	54,400
Luxemburg	1932-33	..	..	1,542	..	23,443	..	5,637
Philippines	1933	..	..	100,000	..	..	..	..
Poland	1933	..	..	11,906	257,025	..	..	268,931
Rumania	1933	25,900	..	90,700*	..	..	..	106,600
Sweden	1933	..	..	91,500†	92,000	..	98,500‡	..
Switzerland	1932	..	..	3,283	..	..	8,878§	108,765
United States	1933	..	..	1,822,000	..	134,000	229,000	2,198,000

* For the whole of the production, molasses and materials.

† For the whole of the production, beet-roots and molasses.

‡ Cellulose.

§ This figure includes the whole of the alcohol bought by the monopoly. 96,415 hectolitres being imported.

TABLE II.—*Alcohol Consumption in Different Countries (given in hectolitres at 100° Gay-Lussac).*

Countries.	Years.	Alcohol for consumption.	Chemical Industries.	Perfumery.	Vinegar Manufacture.	Heating and Lighting.	Carburant.	Export.
Austria . . .	1932	66,244	5,585	781	8,021	70,904	4,852	..
Belgium . . .	1932	63,800	22,584	4,976	15,000	14,800	440	..
Bulgaria . . .	1932	46	786	..	2,645	4,820	..	..
Czechoslovakia . . .	1932	162,000	14,035	..	20,062	181,781	586,116	..
Denmark . . .	1932	7,683	14,988	..	4,015	42,835	120	..
England . . .	1933	230,000	..	10,000	..	507,500	792	..
Estonia . . .	1933	19,940	3,277	..	..	..	3,358	..
France . . .	1932-33	1,365,366	195,353	111,032	50,781	722,050	1,937,938	49,765
Germany . . .	1932-33	399,446	..	30,386	143,000	838,170	1,571,231	..
Jugoslavia . . .	1929	58,000	16,000	..	12,000	40,000	..	60,000
Latvia . . .	1933	23,160	1,960	..	..	4,200	28,400	..
Poland . . .	...	228,480	134,000	4,430	14,150	61,150	..	..
Rumania . . .	1933	146,600	3,100	4,600	5,800	37,200	..	..
Switzerland . . .	1932	38,750	25,730	2,217	..	54,700	..	..
United States . . .	1933	Prohibition	951,000	30,000	130,000	866,000	..	..

TABLE III.—Alcohol as a carburent in the world.

Countries.	Commercial name.	Composition.			Alcohol used in hectolitre.	Per cent. of alcohol produced.	Remarks.
		Petrol.	Benzol.	Alcohol.			
Australia	Shellkol	85	..	15	..	..	Comp.
Austria, 1932	80	..	20	..	..	Do. Petrol.
Belgium, 1932	3/5	..	..	Heavy oils.
Bulgaria	97/96	..	60	..	..	Comp.
Cuba, 1933	37	3	26	56.0	..	..
Czechoslovakia	70	4	20	..	..	..
Denmark, 1933	80	..	30	..	..	..
Ecuador, 1933	70	..	25	0.16	..	Comp.
England	75	..	20	..	..	..
France, 1921-1931.	80	..	15	..	..	Comp.
Germany	50	15	50	..	..	Do.
Hungary, 1933	75	..	25	..	..	Opt.
Italy, 1933	Petrol	Benzol	13/51	1,937,938	44.0	..
Jugoslavia	90	..	10	..	..	..
Latvia, 1933	75	..	25	1,900,000	58.0	Comp.
Natal	80/70	..	20/30	240,000	41.0	Do.
Panama	80	..	20	..	..	..
Philippines	Petrol	Benzol	Alcohol	..	..	..
Poland	Do.	Do.	Do.	..	..	..
Switzerland	Do.	Do.	Do.	..	..	..
Sweden	Do.	Do.	Do.	..	..	..
	80	..	20	..	..	..
	50	..	50	..	..	..
	67	..	33	28,400	52.0	..
	50	..	50	36,500	..	Favor leged.
	80	..	20	..	..	Do.
	70	..	30	100,000	100.0	Do.
	85/70	..	15/30	21,150	7.8	Comp.
	15/30	..	85/70	..	..	..
	75	..	25	..	..	..
	Satisfactory tests made by Swiss Army.	..	..	42,500	14.0	Comp.

(8) *Letter, dated the 23rd/25th September, 1935, from the Director, Imperial Institute of Sugar Technology, Cawnpore.*

I am forwarding herewith a note on some of the points which arose in the course of my formal discussions with the Tariff Board on the 6th September, 1937.

Notes dealing with the other points will follow.

Enclosure.

NOTE ON SOME OF THE POINTS WHICH AROSE IN THE COURSE OF MY INFORMAL DISCUSSIONS WITH THE TARIFF BOARD ON THE 6TH SEPTEMBER, 1937.

(1) *Table I in the Note on Efficiency of Sugar Production.*—The numbers of factories given in this table refer to cane sugar factories only. On page 2 of the note it has been stated that this note deals only with modern cane factories excluding refineries and open pan factories.

The figures in this table do agree with those given in the notes on sugar production directly from cane issued each year except that in the notes Purnabpore Factory, Mairwa, has been included in Bihar, whereas in Table I it has been taken in the United Provinces.

(2) Tables I, II, III, IV, V and VIII have been recalculated for the grouping modified on the following lines as desired. Thus in the new grouping:—

Sind has been left out.

Punjab has been shown as a separate group.

The three groups in the United Provinces and two in Bihar remain as they were.

Bengal, Madras and Bombay have been taken as separate groups. Baroda is taken with Bombay and Indian States along with the adjoining Provinces.

Burma has been left out. Mysore has been shown as a separate group. Other tables in the note on Efficiency of Sugar Production are required to be recalculated.

(3) A table showing figures for tons cane required per ton of sugar, Sugar per cent, cane and recovery of sugar per cent, cane for the season 1934-35 to 1936-37 has been prepared and is also enclosed.

(4) An estimate of the minimum fibre per cent, cane necessary for providing sufficient bagasse, so that an efficiently operated factory may not require additional fuel, is as follows:—

In a factory consumption of steam depends on various factors. For making an estimate the following particulars about plant and working conditions have been supposed taking into consideration the conditions prevailing in Indian sugar factories:—

Plant particulars—

Milling plant consisting of 14 rollers, with a crushing capacity of 900 tons per day and employing quadruple effect evaporator.

Working particulars—

Cane containing 15 to 17 per cent. fibre.

Bagasse containing 50 per cent. fibre and water 44 to 47 per cent.

Raw juice of 150 BX=100=cane weight.

Juice heated in all through a total range of 220° F. with steam at 5 lbs. pressure.

Brix of the syrup 65°.

One lb. of steam at quadruple effect to evaporate 4 lbs. of water.

One lb. of bagasse of the above-mentioned composition affording 2.1 lbs. of steam.

The estimated steam consumption including the losses is about 60 per cent. on cane.

Bagasse required for producing 60 lbs. steam = $60/2.1 = 28.57$ lbs.

Therefore the quantity bagasse per cent. cane sufficient for affording the required amount of steam = 28.57 lbs. (100 lbs. of bagasse contains 50 lbs. of fibre).

Therefore 28.57 lbs. of bagasse would contain $28.57 \times 50/100 = 14.29$ lbs. of fibre per cent. cane.

Therefore the minimum fibre per cent. cane necessary for providing sufficient bagasse, so that an efficiently operated factory may not require additional fuel, may be taken as 14 to 15 per cent.

This calculated figure is confirmed by available data for fuel consumption in Java factories. Taking the average for 1928 (later figures not being available), the fibre in cane was 12.5 per cent. and production of bagasse was 24.7 per cent. on cane. The shortage of fuel (in terms of calorific value) was 9 per cent. on the calorific value of the bagasse obtained. This means that if the fibre in cane had been higher by 9 per cent. the bagasse would have been just sufficient to meet the fuel requirements of the factories. In other words cane with a fibre content of $12.5 + 9/100 \times 12.5$ or 13.625 or say 14 per cent. will provide sufficient fuel for the factory.



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TABLE I.—Showing groups, Territories covered, No. of Central sugar factories existing, working and Reporting.

Serial No.	Groups.	Territories covered.	No. of Central sugar factories existing.					No. of Central sugar factories working.	
			1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	1932-33.	1933-34.
1	Punjab . . .	Punjab	1	6	8	8	8	1	6
2	West United Provinces.	Dehra Dun, Saharanpur, Muzaffarnagar, Bijnor, Meerut, Nainital, Rampur, Etah.	4	19	21	23	23	4	17
3	Central United Provinces.	Bareilly, Pilibhit, Sahjahanpur, Sitapur, Hardoi, Lucknow, Cawnpore, Gonda, Allahabad.	9	17	18	19	20	9	17
4	Eastern United Provinces.	Barabanki, Bahraich, Jaunpur, Basti, Gorakhpur.	21	30	30	30	31	21	30
5	North Bihar . .	Champaran, Saran, Muzaffarpur, Darbhanga.	17	26	28	28	29	17	26
6	South Bihar . .	Bhagalpur, Shahabad, Patna, Gaya.	1	6	6	6	6	1	6
7	Bengal	Bengal . . . . .	..	2	7	7	7	..	2
8	Madras	Madras	1	5	8	8	10	1	3
9	Bombay and Baroda	Bombay and Baroda	1	8	8	9	8	1	6
10	Mysore	Mysore . . . . .	..	1	1	1	1	..	1
		Total	55	120	135	139	143	55	113

TABLE I.—Showing groups, Territories covered, No. of Central sugar factories existing, working and Reporting—contd.

Serial No.	Groups.	Territories covered.	No. of Central sugar factories working.			No. of Central Sugar factories, reporting.*				
			1934-35.	1935-36.	1936-37.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
1	Punjab	Punjab	8	5	6	1	5	2	5	6
2	West United Provinces.	Dehra Dun, Saharanpore, Muzaffarnagar, Bijnor, Meerut, Nainital, Rampur, Etah.	21	22	21	4	16	14	20	18
3	Central United Provinces.	Bareilly, Pilibhit, Saharanpur, Sitapur, Hardoi, Lucknow, Cawnpore, Gonda, Allahabad.	17	18	19	9	14	9	18	12
4	Eastern United Provinces.	Barabanki, Bahraich, Jaunpur, Basti, Gorakhpur.	30	29	31	21	28	20	28	30
5	North Bihar	Champanan, Saran, Muzaffarpur, Darbhanga.	28	28	27	17	25	21	25	26
6	South Bihar	Bhagalpur, Shahabad, Patna, Gaya.	6	6	6	1	5	3	6	6
7	Bengal	Bengal	5	6	6	..	2	3	6	5
8	Madras	Madras	7	8	10	1	3	5	8	8
9	Bombay and Baroda.	Bombay and Baroda	6	8	8	1	5	2	8	7
10	Mysore	Mysore	1	1	1	..	1	..	1	..
		Total	129	181	135	55	104	79	125	118

* One factory has been excluded as it is a small experimental factory for training of students of the Imperial Institute of Sugar Technology.

TABLE II.—*Quality of cane during seasons 1934-35, 1935-36 and 1936-37.*

Serial No.	Groups.	Duration of season (days).			Sugar per cent. Cane.			Fibre per cent. Cane.
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	
1	Punjab	93	116	142	8.96	10.63	10.98	13.74
2	West United Provinces	131	145	171	9.61	11.39	11.88	14.06
3	Central United Provinces	143	165	138	11.81	11.91	12.16	15.27
4	Eastern United Provinces	139	163	160	11.72	12.05	12.28	15.74
5	North Bihar	129	149	176	11.28	11.59	11.42	16.15
6	South Bihar	142	139	161	11.61	11.33	11.88	16.69
7	Bengal	131	165	156	11.27	11.29	11.00	14.68
8	Madras	88	125	123	11.73	11.90	11.97	10.21
9	Bombay and Baroda	217	192	186	13.80	13.14	13.27	13.88
10	Mysore . . . . .	..	113	..	..	13.13	..	..

NOTES :—(1) Figures for seasons 1932-33 and 1933-34 are not available.

(2) Figures for Primary juice purities are Arithmetical averages. All others are weighted averages.

TABLE II.—*Quality of cane during seasons 1934-35, 1935-36 and 1936-37—contd.*

Serial No.	Groups	Fibre per cent. Cane.		Primary juice purity.			Recovery of sugar per cent. Cane.		
		1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
1	Punjab	15.97	15.93	74.33	77.59	79.43	5.99	7.80	8.63
2	West United Provinces .	15.06	15.63	75.56	80.09	82.52	7.06	8.84	9.43
3	Central United Provinces .	16.60	16.02	83.12	82.50	84.31	9.25	9.15	9.70
4	Eastern United Provinces .	15.46	16.36	83.49	83.46	84.28	9.07	9.56	9.93
5	North Bihar	16.72	16.80	82.29	81.32	80.95	8.62	9.18	9.16
6	South Bihar	16.72	17.94	82.70	81.44	83.55	9.03	8.87	9.44
7	Bengal	17.19	17.07	81.42	79.33	81.25	8.15	8.18	8.68
8	Madras	13.10	13.04	83.12	81.26	81.77	9.30	9.21	9.11
9	Bombay and Baroda .	14.62	14.50	84.12	84.38	85.71	10.90	10.40	10.84
10	Mysore	12.89	..	..	87.00	..	9.93	10.25	10.10

NOTES :—(1) Figures for seasons 1932-33 and 1933-34 are not available.

(2) Figures for Primary juice purities are Arithmetical averages. All others are weighted averages.

TABLE III.—*Showing duration of season and number of days actual working for Central Sugar Factories in India for the seasons 1932-33 to 1936-37.*

Serial No.	Groups.	Duration of season.					Number of days actual working.				
		1932-33.	1933-34.	1934-35.	1935-36.	1936-37.	1932-33.	1933-34.	1934-35.	1935-36.	1936-37.
1	Punjab	134	89	93	116	142	110	61	76	93	130
2	West United Provinces . .	146	119	131	145	171	120	97	103	124	150
3	Central United Provinces .	145	154	143	165	138	128	125	120	137	111
4	Eastern United Provinces .	173	144	139	163	160	146	117	116	146	144
5	North Bihar	181	148	129	149	176	150	108	111	129	154
6	South Bihar	170	122	142	139	161	129	110	135	133	152
7	Bengal . . . . .	..	138	131	165	156	..	109	94	141	138
8	Madras	143	95	88	125	123	143	66	77	104	105
9	Bombay and Baroda . .	206	121	217	192	186	175	97	170	159	150
10	Mysore . . . . .	..	136	..	113	..	..	123	..	107	..

TABLE IV.—*Extraction figures for Central Sugar Factories.*

Serial No.	Groups.	Mulling Extraction.			Boiling House Extraction.			Overall Extraction.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
1	Punjab	89.79	89.36	89.32	73.82	82.13	88.84	66.30	73.39	79.35
2	West United Provinces	89.87	90.28	90.39	82.23	87.22	88.28	73.90	78.74	79.80
3	Central United Provinces	91.04	90.43	91.63	86.26	85.42	86.66	78.54	77.25	79.41
4	Eastern United Provinces	88.75	90.07	90.97	86.85	88.19	88.92	77.07	79.65	80.89
5	North Bihar	91.12	91.63	91.76	83.90	86.44	87.41	76.45	79.21	80.21
6	South Bihar	89.12	89.01	90.79	87.26	87.95	87.52	77.77	78.29	79.46
7	Bengal	90.72	88.55	87.27	82.25	81.81	90.51	74.12	72.45	78.99
8	Madras	94.16	92.54	92.10	83.83	83.83	82.70	78.94	77.58	76.17
9	Bombay and Baroda	89.15	89.44	90.23	88.07	88.37	90.23	78.51	79.04	81.43
10	Mysore . . . . .	..	90.71	..	..	85.73	..	..	77.77	..

NOTE.—All figures are weighted averages.

TABLE V.—*Losses between Central Sugar Factories in India for the seasons 1934-35 to 1936-37.*

Serial No.	Particulars	Punjab.			West United Provinces.								
		Cane—1.			Sugar in Cane—100.			Cane—100.			Sugar in Cane—100.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
	(a) Mill House—												
1	(i) Sugar in cane	8.96	10.63	10.98	100.00	100.00	100.00	9.61	11.39	11.88	100.00	100.00	100.00
2	(ii) Sugar and coked mixed juice	3.05	9.35	9.81	89.79	89.36	89.32	8.64	10.28	10.74	89.87	90.28	90.39
3	(iii) Sugar lost in Bagasse.	0.91	1.23	1.17	10.21	10.64	10.68	0.97	1.11	1.14	10.13	9.72	9.61
	(b) Manufacturing House—												
4	(i) Sugar lost in mixed juice	8.05	5.50	9.81	89.79	89.36	89.32	8.64	10.28	10.74	89.87	90.28	90.39
5	(ii) Sugar recovered as marketable sugar.	5.99	8.00	8.63	66.30	73.39	79.35	7.06	8.84	9.43	73.90	78.74	79.80
6	(iii) Sugar lost in manufacturing process.	2.06	1.70	1.18	23.49	15.97	9.97	1.58	1.44	1.31	15.97	11.54	10.59

TABLE V.—*Sugar balance of Central Sugar Factories in India for the seasons 1934-35 to 1936-37—contd.*

Serial No.		Central United Provinces.						Eastern United Provinces.					
		Cane—100.			Sugar in Cane—100.			Cane—100.			Sugar in Cane—100.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
		<i>(a) Mill House—</i>											
1	(i) Sugar in cane	11.81	11.91	12.16	100.00	100.00	100.00	11.72	12.05	12.28	100.00	100.00	100.00
2	(ii) Sugar extracted in mixed juice.	10.75	10.77	11.14	91.04	90.43	91.63	10.40	10.85	11.15	88.75	90.07	90.97
3	(iii) Sugar lost in Bagasse.	1.06	1.14	1.02	8.96	9.57	8.37	1.32	1.20	1.13	11.25	9.93	9.03
		<i>(b) Manufacturing House—</i>											
4	(i) Sugar in mixed juice.	10.75	10.77	11.14	91.04	90.43	91.63	10.40	10.85	11.15	88.75	90.07	90.97
5	(ii) Sugar recovered as marketable sugar.	9.25	9.15	9.70	78.54	77.25	79.41	9.07	9.56	9.93	77.07	79.65	80.89
6	(iii) Sugar lost in manufacturing process.	1.50	1.62	1.44	12.50	13.18	12.22	1.37	1.27	1.22	11.68	10.42	10.08

TABLE V.—*Sugar balance of Central Sugar Factories in India for the seasons 1934-35 to 1936-37—contd.*

Serial No.	Particulars.	North Bihar.						South Bihar.					
		Cane—100.			Sugar in Cane—100.			Cane—100.			Sugar in Cane—100.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
	(a) Mill House—												
1	(i) Sugar in cane	11.28	11.59	11.42	100.00	100.00	100.00	11.61	11.33	11.88	100.00	100.00	100.00
2	(ii) Sugar extracted in mixed juice.	10.29	10.62	10.42	91.12	91.63	91.76	10.35	10.08	10.79	89.12	89.01	90.79
3	(iii) Sugar lost in Bagasse.	0.99	0.97	0.94	8.88	8.37	8.24	1.26	1.25	1.09	10.88	10.99	9.21
	(b) Manufacturing House—												
4	(i) Sugar in mixed juice.	10.29	10.62	10.42	91.12	91.63	91.76	10.35	10.08	10.79	89.12	89.01	90.79
5	(ii) Sugar recovered as marketable sugar.	8.62	9.18	9.16	76.45	79.21	80.21	9.03	8.87	9.44	77.77	78.29	79.46
6	(iii) Sugar lost in manufacturing process.	1.67	1.44	1.32	14.67	12.42	11.55	1.32	1.21	1.35	11.35	10.72	11.33

TABLE V.—*Sugar balance of Central Sugar Factories in India for the seasons 1931-35 to 1936-37—contd.*

Serial No.	Particulars.	Bengal.						Madras.					
		Cane—100.			Sugar in Cane—100.			Cane—100.			Sugar in Cane—100.		
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
	(a) Mill House—												
1	(i) Sugar in cane	11.27	11.29	11.00	100.00	100.00	100.00	11.73	11.90	11.97	100.00	100.00	100.00
2	(ii) Sugar extracted in mixed juice.	10.22	10.00	9.60	90.72	88.55	87.27	11.05	11.01	11.03	94.16	92.54	92.10
3	(iii) Sugar lost in Bagasse.	1.05	1.23	1.40	9.28	11.45	12.73	0.68	0.89	0.94	5.84	7.46	7.90
	(b) Manufacturing House—												
4	(i) Sugar in mixed juice.	10.22	10.00	9.60	90.72	88.55	87.27	11.05	11.01	11.03	94.16	92.54	92.10
5	(ii) Sugar recovered as marketable sugar.	8.35	8.18	8.68	74.12	72.45	78.99	9.30	9.21	9.12	78.94	77.58	76.17
6	(iii) Sugar lost in manufacturing process.	1.37	1.82	0.92	16.60	16.10	8.28	1.75	1.80	1.91	15.22	14.96	15.93

TABLE V.—*Sugar balance of Central Sugar Factories in India for the seasons 1934-35 to 1936-37—continued.*

Serial No.	Particulars.	Bombay and Baroda.						Mysore.					
		Cane—100.			Sugar in Cane—100.			Cane—100.		Sugar in Cane—100.			
		1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.	1934-35.	1935-36.	1936-37.
<i>(a) Mill House—</i>													
1	(i) Sugar in cane	13.80	13.40	13.27	100.00	100.00	100.00	..	13.13	..	..	100.00	..
2	(ii) Sugar extracted in mixed juice.	12.30	11.65	11.97	89.15	89.44	90.23	..	11.91	..	..	90.73	..
3	(iii) Sugar lost in Bagasse.	1.50	1.49	1.30	10.85	10.65	9.77	..	1.22	..	..	9.29	..
<i>(b) Manufacturing House—</i>													
4	(i) Sugar in mixed juice.	12.30	11.65	11.97	89.15	89.44	90.23	..	11.91	..	..	90.71	..
5	(ii) Sugar recovered as marketable sugar.	10.90	10.40	10.84	78.51	79.04	81.43	..	10.25	..	..	77.77	..
6	(iii) Sugar lost in manufacturing process.	1.40	1.25	1.13	10.64	10.40	8.80	..	1.66	..	..	12.94	..

Table showing sugar per cent. cane, recovery of sugar per cent. cane and tons cane required per ton of sugar for central sugar factories for the seasons 1934-35 to 1936-37.

Serial No.	Groups.	Sugar per cent. cane.			Recovery of Sugar per cent. cane.			Tons cane required per ton of Sugar.		
		1934-35	1935-36	1936-37	1934-35	1935-36	1936-37	1934-35	1935-36	1936-37
1	Punjab	8.96	10.63	10.98	5.99	7.80	8.63	16.69	12.82	11.59
2	West United Provinces	9.61	11.39	11.88	7.06	8.84	9.43	14.17	11.31	10.60
3	Central United Provinces	11.81	11.91	12.16	9.25	9.15	9.70	10.81	10.92	10.30
4	Eastern United Provinces	11.72	12.05	12.28	9.07	9.56	9.93	11.03	10.46	10.07
5	North Bihar	11.28	11.59	11.42	8.62	9.18	9.16	11.60	10.89	10.91
6	South Bihar	11.61	11.33	11.88	9.03	8.87	9.44	11.08	11.27	10.59
7	Bengal	11.27	11.29	11.00	8.15	8.18	8.68	12.27	12.23	11.52
8	Madras	11.73	11.90	11.97	9.30	9.21	9.12	10.75	10.86	10.96
9	Bombay and Baroda	13.80	13.14	13.27	10.90	10.40	10.84	9.18	9.62	9.22
10	Mysore . . . . .	..	13.13	..	..	10.25	..	..	9.76	..

TABLE VIII.—*Showing manufacturing expenses per maund of sugar of central sugar factories in India during the season 1935-36.*

(Cost of cane excluded).

Serial No.	Group.	No. of factories reporting in each group.	Average recovery of sugar per cent. cane.	*Manufacturing expenses per maund of sugar (excluding depreciation and interest on working capital).	†Depreciation and interest on working capital per maund of sugar.	Total cost of manufacture per maund of sugar.
				Rs. a. p.	Rs. a. p.	Rs. a. p.
1	Punjab	3	7.87	2 4 0.83	0 7 7.56	2 11 8.39
2	West United Provinces.	14	8.77	1 10 5.56	0 6 8.76	2 1 2.32
3	Central United Provinces.	12	9.13	1 8 4.84	0 6 4.44	1 14 9.28
4	Eastern United Provinces.	19	9.59	1 11 1.03	0 5 10.68	2 0 11.71
5	North Bihar	21	9.22	1 14 6.95	0 6 3.36	2 4 10.31
6	South Bihar	1	8.24	1 1 2.50	0 7 3	1 8 5.50
7	Bengal	1	8.27	1 7 8.54	0 7 3	1 14 11.54
8	Madras	3	7.98	2 5 6.05	0 7 6	2 13 0.05
9	Bombay and Baroda.	2	10.51	2 4 4.0	0 5 0	2 9 4.00
10	Mysore	..	..	..	..	..

*Figures under this column include power, fuel and stores, salaries and wages packing, repairs and renewals and miscellaneous (including insurance, brokerage, managing agents charges, etc.). The figures are averages of the figures reported by the factories.

†The figures for depreciation and interest on working capital as reported by these factories do not appear to have been calculated on a uniform basis. In a majority of cases figures reported are very high, while several factories have not given one or other of the two figures altogether. For these reasons the figures reported under these items have not been taken into account. But a figure of six annas has been assumed for depreciation and interest on working capital for 9.50 per cent. recovery. For an increase or decrease of 0.25 per cent. in recovery, corresponding decrease or increase of three pies has been made in the figures for depreciation and interest on working capital

(9) *Letter, dated the 23rd September, 1937, from Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

In continuation of my letter, dated the 23rd September, 1937, I am sending herewith a note on the experiments on the manufacture of an insoluble road composition from molasses.

Enclosure.

NOTE ON THE EXPERIMENTS ON THE MANUFACTURE OF AN INSOLUBLE ROAD COMPOSITION FROM MOLASSES FOR THE INFORMATION OF THE TARIFF BOARD.

Experiments on covering molasses into an insoluble product for use as a road surfacing material were started in the laboratories of the Harcourt Butler Technological Institute as early as 1933.

A. Mysore Experiments.

The Mysore Public Works Department also tried some experiments soon after that their preliminary process consisting of using dilute solutions of molasses in water bound roads in place of water in metalling road in ordinary way. Such roads, however, did not stand the rains as the whole of the molasses washed away. There was also stickiness, as was evident by molasses adhering to the motor tyres.

The next attempt of the Mysore Government was to try the use of molasses with limestone. The limestone was used in the form of Kunker because of its cheapness and ready availability. The exact method is described as follows:—

“The surface was grouted with molasses at 2 sq. yds. per gallon and 25 per cent. water was sprinkled on the surface. After grouting Bajri was sprinkled on the surface and rolled. A coat of tar was given after one month.

The effect of rains was to open up the joints to some extent but there was no movement of the metal.

Dilute shira with limestone although gave a much more stable road than ordinary water bound roads and tended to increase its life cannot replace the top covering tar.”

B. Cawnpore Experiments.

(i) *Work done during 1933-36.*—The failure to have an insoluble road composition lay in the assumption made that calcium saccharate produced as a result of the interaction of the sugars in molasses was the binding agent. It is well-known that calcium saccharate is very soluble at ordinary temperatures and will naturally be washed off during heavy rains. The researches at the Harcourt Butler Technological and later on at the Imperial Institute of Sugar Technology consisted in finding out optimum conditions for resinification of molasses in order to convert it into a product similar to rubber for application as a road surfacing material. It had been observed by previous workers that substances containing aldehydes and ketones could be resinified with phenols in presence of suitable catalysts. Patent was taken in 1936 of an insoluble road composition from molasses using an alkali catalyst.

(ii) *Work done during 1936-37.*—A 300' x 10½' road was made with the patented composition, which stood rains although there was peeling off at the surface, the body of the road remaining quite intact. In 1936 further work resulted in finding out the optimum conditions for the manufacture of an improved road composition from molasses using an acid catalyst. The product obtained was superior to the previous composition. The improved composition, moreover, could be obtained in a semi-pasty condition better suited for transport and application on stone chips. The previous composition was thicker and required thinning before application. The phenolic bodies were found in the tar and petroleum residues. ~~Further~~ improvement was made in the discovery of a seal coating material made from the composition by the application of which the surface peeling was altogether eliminated and the prepared road after setting presented a smooth and polished surface. The improved road composition and seal coating material is subject of a recent patent application for which the Government of India sanction has been obtained. The approximate cost of manufacturing the composition after paying the interest and depreciation comes to between Rs. 45 and Rs. 50 per ton (paying 4 annas per maund for molasses) as against Rs. 160 per ton for asphalt used for making tar-macadum roads. Apart from the considerable cheapness of the composition the molasses-tar-macadum road has the following characteristic properties:—

- (1) Absolute insolubility in water.
- (2) Harder than tar-macadum roads and does not melt in summer as the latter does.

(3) Sustains heavy traffic.

(4) Is a better non-conductor of heat and not likely to heat the feet of the pedestrian traffic.

The comparative costs of constructing cement, tar-macadam and molasses tar-macadam roads are:—

	Per sq. yds.
	Rs. A.
(1) Cement Concrete road	3 10
(2) Tar-macadam road	0 15
(4) Molasses tar-macadam road	0 10

Assuming that molasses tar-macadam road has the same life, the same covering power, and the same endurance under heavy traffic, there is no reason why molasses, which is a waste product and has been accumulating in increasing amounts every year, should not be used for road making in India and owing to its cheapness should not successfully compete with asphalt and cement roads.

It is suggested that fairly long strips of test roads, say 2 furlongs long, should be made in different parts of India in the plains and on the hills for durability tests.

(10) *Letter, dated the 11th October, 1937, from the Tariff Board to Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

I am desired to refer to your note enclosed with your letter, dated the 23rd/25th ultimo, Tables I and II. Presuming that the recovery rate of sugar on cane given in Table II are for the number of sugar factories reporting given in Table I, the weighted average for All-India 1936-37 comes to 9.52. In this calculation I have also included Mysore Sugar Mills with the recovery at 10.10 for the last season. In your note on the production of sugar direct from cane published in the "Indian Trade Journal" of October 2nd, in Table XIV, 140 sugar factories have been grouped according to their recovery rates. The weighted average for the recovery rate for All-India according to this Table works out to 9.12. In working out the weighted average from Table XIV I have taken the mean from each group (10.5 to 10.9, 10 to 10.4.....) of recovery rates. This apparent discrepancy in the average for All-India is probably explainable in two ways. The average of 9.52 is arrived at from the figures of 119 factories and the result of taking 140 factories into consideration might have brought down the average. It is also possible that the distribution of the number of factories in each group in Table XIV may not be even round the mean figure taken by me and might thus have vitiated the weighted average. I have not the figures for the recovery rates for all the 140 factories before me and I am not therefore in a position to find the correct explanation. It is of considerable importance to the Tariff Board to find the true average recovery rate for All-India and I am therefore to ask if you can throw any light on the subject after examining the figures from which Table XIV in the "Indian Trade Journal" and Tables I and II referred to above were compiled. It may be noted that the number of Central Sugar Factories working in 1936-37 is given as 135 in Table I enclosed with your D.O. 14021, though recovery rates of 140 factories have been grouped in Table XIV of the "Indian Trade Journal".

2. I am further to enquire if the Aska Sugar Works and Distillery which now is situated in the province of Orissa has been included by you in Madras or Bihar province or in neither in the distribution of factories given in Table I, enclosure to your letter, dated the 23rd/25th ultimo.

(11) *Letter, dated the 6th November, 1937, from Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

I am in receipt of your letter, dated the 11th October, 1937.

The method adopted by you will not give the correct figure for average recovery. The figures for the average recovery calculated from Tables I and II enclosed with my letter, dated the 23rd/25th September, 1937, and Table XIV of the note on the production of sugar direct from cane for the season 1936-37, are therefore not comparable. They would have been comparable if all factories were of the same capacity and had worked for the same period.

The true average recovery per cent. can be found by dividing the total amount of sugar made multiplied by 100, with the total quantity of cane crushed of all the sugar factories. The true average recovery for all-India for 140 factories for the season 1936-37 is 9.50 and given in Table XII of the note.

Central Sugar Factories situated in Burma, Sind and Central States have not been included in Table I referred to by you whereas in the note all these have been considered.

The Aska Sugar Works and Distillery has not been included in either Madras or Bihar Province given in Table I.

(12) *Letter, dated the 3rd October, 1937, from the Tariff Board, to Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

I am desired to request you to kindly send the following figures:—

- (i) Statement showing total stocks with sugar factories at the end of each fortnight from the beginning of working season 1935-36. My office is preparing a statement from the information published by you in the "Indian Trade Journal" but I presume you have it in a readily available form already and it can be used for a check.
- (ii) Fortnightly figures of stocks of sugar held (a) at ports, (b) in the up-country reporting markets.

2. I have not been able to find if you have already supplied as with a statement showing *per capita* consumption of (i) Sugar and (ii) Gur for each province. If you have not, could you kindly send it to me now with a note as to how these figures are arrived at.

(13) *Letter, dated the 16th October, 1937, from the Director, Imperial Institute of Sugar Technology, India, Cawnpore.*

As desired in your letter, dated 3rd October, 1937, I send herewith four copies of each of the following statements for your information:—

- (1) Consumption of sugar in whole of India for the last five years. Figures for the preceding years are being calculated and will be sent to you shortly.
- (2) All-India production and consumption of gur for the last ten years.
- (3) *Per capita* consumption of sugar and gur in India by provinces for the last two years.

The method of calculating the figures has been explained in the covering notes.

As regards the stocks with sugar factories, I enclose herewith a statement which gives the figures for the reporting factories only. If you desire, the figures for the non-reporting factories may be calculated in this office and supplied to you, but it may be pointed out that these figures in any case will be only approximate.

The fortnightly figures of stocks of sugar held at ports and in the up-country markets will be supplied to you shortly.

Enclosure.

CONSUMPTION OF SUGAR.

The sugar required for consumption in India is now mostly manufactured in the country in Central Sugar Factories, refineries and Khandsari concerns. A very small portion of sugar consumed is imported from abroad. Details of the quantities of sugar estimated to have been consumed during each of the last five years are given in Table I. The year for purposes of the calculations is changed from the official year to the period 1st November to 31st October which includes the cane crushing season for which accurate figures of productions, stocks, etc., are available.

Figures for production of sugar refined from gur are generally available for the calendar years. In calculating the requirements of sugar, these figures for the period November to October have been calculated on the assumption that sugar is produced at a uniform rate during the 11 months from February to December.

It may be pointed out that in calculating the requirements of sugar no allowance has been made for the difference between the initial and closing invisible stocks in the interior markets. The imports of sugar into India across the land frontiers of the French and Portuguese settlements have also not been taken into account. It is not expected, however, that any material error will be introduced in the calculations on account of this.

As regards the requirements of sugar of the various provinces, these are met from the production of sugar within the provinces, imports by land from the adjoining provinces and imports by sea. The method of estimating these requirements is illustrated below:—

United Provinces.—Quantity of sugar consumed in the United Provinces during the period 1st November, 1935, to 31st October, 1936 (in tons):—

Initial stock on 1st November, 1935—	
(1) Inland markets	3,156
(2) With factories . . . . .	...
Production of sugar in 1935-36—	
From cane	530,000
From gur	29,367
From Khandsari	37,500
Imports by inland (rail and river borne) trade November to October	6,600
Total supply	656,626
Deduct—Exports by inland (rail and river borne) trade November to October	475,000
Clearing stock—	
(1) With factories on 31st October, 1936	63,000
(2) In principal inland markets	1,000
Total to be deducted	539,000
Quantity consumed to the nearest thousand	118,000
Add—Consumption from state within the province	16,000
Consumption of the whole province to the nearest thousand	134,000

As in the calculations of the quantities consumed shown in Table I no allowance has been made for the difference between initial and closing "invisible" stocks in the interior markets of the province. The difference are, however, not expected to be large.

The calculation of figures for production of sugar refined from gur in the provinces has been made in precisely the same way as explained above. As regards the production of sugar by Khandsaris, it has been assumed that of the total sugar produced by this method, seventy per cent. is produced in the United Provinces, ten in the Punjab and five each in Bihar, Bengal, Madras and Bombay.

An item which is likely to introduce material error in the calculations relates to imports and exports of sugar by road. It has not been possible to collect reliable information on this item. It is, however, believed that very little sugar is transported by road over long distances.

Yet another factor which is not known relates to share of different provinces in the exports by land to Frontier countries. For purposes of calculation, it is assumed that 20,000 tons are exported from Karachi and the rest are exported from Punjab, Delhi and North-West Frontier Province.

Quantities of sugar consumed calculated in the way shown above and figures for *per capita* consumption in the various provinces during the years 1934-35 and 1935-36 are shown in Table II. It will be observed that the figures for *per capita* consumption differ greatly in the different provinces. The consumption per head is the highest in Bombay and lowest in Kashmir and Mysore.

TABLE II.—Consumption of sugar by provinces (November to October).

Names.	1934-35 (Tons).	Per capita in lbs.	1935-36 (Tons).	Per capita in lbs.
Bengal	140,000	5.9	158,000	6.7
Bombay	243,000	18.0	212,000	15.5
Madras	85,000	3.4	72,000	2.8
Bihar & Orissa	57,000	2.9	71,000	3.1
United Provinces	124,000	5.4	130,000	5.6
Punjab (N.-W F. P.) Delhi	213,000	13.5	233,000	14.6
C. P. & Berar	40,000	4.8	40,000	5.1
Assam	11,000	2.5	14,000	3.5
Sind & British Baluchistan	20,000	8.8	22,000	9.5
Rajputana	49,000	8.9	53,000	9.5
Central India	26,000	5.5	28,000	6.1
Nizam's Territory	17,000	2.5	18,000	2.6
Kashmir	2,600	1.5	2,000	1.2
Mysore	5,000	1.5	8,000	2.6
Burma	27,000	3.9	21,000	3.1
All-India	1,059,000	6.5	1,072,000	6.5

CONSUMPTION OF GUR IN THE PROVINCES.

The calculations of figures for consumption of gur in the Provinces presents many difficulties. In the first place, figures for production of gur in the Provinces are not available. They require to be calculated from the total yield of gur as estimated by the Director of Agriculture of the Provinces after allowing for the gur equivalent of cane used in cane factories and Khandsaris, and for setts and chewing. Gur used in refineries has also to be excluded as it becomes available for consumption in the form of sugar.

The figures for cane used in factories and gur used in refineries in the provinces are available but those for cane used in Khandsaris and for setts and chewing require to be estimated. No reliable data at all are available on these two items. The production of sugar by Khandsaris, since it was first placed at 250,000 tons by the Sugar Committee in the year 1920 and at 200,000 tons by the Tariff Board in the year 1930, has been modified year after year from a general knowledge of the conditions of the Khandsaris. The quantity of cane used for setts and chewing was taken at 15 per cent. of the total yield by the Tariff Board and has been accepted to be fairly true to this date. If the percentage recovery of sugar on cane in Khandsaris is taken as five and that of gur on cane is taken as ten, the gur equivalent of cane used in Khandsari and setts and chewing can at best be trusted to the nearest ten thousand tons and no more. The figures for production calculated in this way for all-India for each of the last ten years and for the provinces during the years 1934-35 and 1935-36 are shown in Tables I and II respectively. The year for purposes of calculation is reckoned from 1st November to 31st October, as it is generally in November that the harvesting begins and cane is used in factories and for setts and chewing.

As regards consumption of gur in India, whatever is produced is consumed except for a very small quantity of gur exported to frontier countries. The figures for consumption for the last ten years are shown in Table I. No gur is imported into the country.

To calculate, the consumption in the provinces, it is necessary to take into account figures for imports into the Provinces and exports therefrom to the adjoining states and Provinces. The figures for imports and exports of gur are not separately available. They are combined with figures for imports and exports of molasses. Fortunately enough production of molasses is relatively small, the largest production being in the United Provinces where it is slightly less than two lakhs tons. Moreover all the molasses produced is not exported out of the provinces. It is unlikely that the error in figures for consumption for the provinces will exceed 50,000 tons on account of this. The details of calculating the figure for production and consumption in the United Provinces are shown below:—

Year 1935-36.	
	Tons.
Gross production of gur as estimated by the Director of Agriculture	3,336,000
Gur equivalent of cane used in factories	571,098
Gur used in refineries	52,872
Gur equivalent of cane used in Khandsaris*	175,000
Setts and chewing 15 per cent. of total gur	500,000
Net production of gur	2,036,630

* It is assumed that of the total sugar manufactured by the Khandsari method, 70 per cent. is produced in the United Provinces, 10 per cent. in the Punjab, and 5 per cent. each in Bihar, Bengal, Madras and Bombay.

Year 1935-36.	
Tons.	
Imports of gur, rab, molasses, jaggery, etc., by inland rail and river-borne trade . . .	10,330
Exports of gur, rab, molasses, jaggery, etc., by inland rail and river-borne trade . . .	391,166
Consumption to the nearest lakh . . .	1,700,000

It will be observed that no allowance has been made in the calculations for imports and exports of gur by road. No reliable statistics are available in this connection.

The share of the different provinces in the exports of gur is also not known. Since the total export is very small, this factor will not introduce any material error in the calculations.

Figures for consumption in the provinces for the years 1934-35, 1935-36 calculated in the way described above are shown in Table II. The *per capita* consumption figures are also shown against the total consumption in the provinces. The *per capita* consumption is the highest in the United Provinces and lowest in Mysore, the all-India *per capita* consumption being only 23.5 and 25.8 lbs. during 1934-35 and 1935-36 respectively.

TABLE I.—All-India Production and Consumption of Gur (November to October).

Year.	Calculated net production of gur.	Consumption of gur.	Exports of gur through Land Frontier Routes.
	Tons.	Tons.	Tons.
1927-28	2,300,000	*2,300,000	..
1928-29	1,800,000	1,800,000	..
1929-30	1,800,000	1,800,000	..
1930-31	2,200,000	2,200,000	..
1931-32	2,800,000	2,800,000	..
1932-33	3,200,000	3,200,000	4,553
1933-34	3,500,000	3,500,000	4,946
1934-35	3,700,000	3,700,000	4,216
1935-36	4,100,000	4,100,000	5,255
1936-37	4,500,000	4,500,000	Not yet available

*For the period 1927-28 to 1931-32 the consumption is estimated at the same as production. The export of gur through the Land Frontier Routes is not available during this period.

TABLE II.—*Production and consumption of gur in India (November-October) by Provinces and States.**

	1934-35.			1935-36.		
	Produc- tion.	Consump- tion.	Per capita con- sump- tion.	Produc- tion.	Consump- tion.	Per capita con- sump- tion.
	Tons.	Tons.	Lbs.	Tons.	Tons.	Lbs.
United Provinces in- cluding states.	1,718,000	1,442,000	63·5	2,037,000	1,656,000	72·4
Punjab	225,000	364,000	23·1	252,000	430,000	27·0
Bihar and Orissa	348,000	279,000	14·1	287,000	280,000	14·0
Bengal	389,000	452,000	19·2	432,000	504,500	21·3
Madras	229,000	213,000	8·5	232,000	224,000	8·8
Bombay (including Sind and States).	189,000	149,000	11·0	226,000	256,000	18·7
North-West Frontier Province.	35,000	Included in Punjab.	..	54,000	Included in Punjab.	..
Assam	29,000	37,400	8·5	31,000	41,500	9·4
Central Provinces and Berar.	40,000	79,300	9·4	41,000	87,300	10·2
Delhi	7,000	Included in Punjab.	..	3,000	Included in Punjab.	..
Mysore	30,000	24,000	7·9	22,000	11,000	3·5
Hyderabad	79,000	86,300	12·6	84,000	91,000	13·2
Baroda	2,500	Included in Bombay.	..	2,500	Included in Bombay.	..
Bhopal	5,400	..	..	4,300	..	..
All-India . . . . .	..	..	23·5	..	..	25·8

* (1) Indian States, which fall within the external boundary of a province, are included in that province. (2) Punjab includes N.-W. F. P. and Delhi. (3) Bombay includes Sind, Baroda and W. I. States. (4) Figures for Mysore and Hyderabad are shown separately.

Stocks of sugar with the reporting factories at the end of each month during the season 1935-36.

	No. of factories reported.	Clearing stock of the reported factories.
		Maunds.
November, 1935	67	310,766
December, 1935	100	2,469,126
January, 1936	107	5,360,881
February, 1936	109	8,390,149
March, 1936	113	9,866,963
April, 1936	92	10,284,359
May, 1936	87	9,037,233
June, 1936	83	7,120,679
July, 1936	99	7,520,076
August, 1936	99	5,918,208
September, 1936	94	4,117,051
October, 1936	91	2,590,315

Stocks of sugar with the reporting factories at the end of each fortnight during the season 1936-37.

	No. of reported Factories.	Closing stock of the reported Factories.
		Maunds.
November 1936	104	1,796,209
For the fortnight ending—		
15th December, 1936	99	2,157,768
31st December, 1936	99	3,240,000
15th January, 1937	106	4,285,502
31st January, 1937	107	5,637,481
14th February, 1937	106	6,583,503
28th February, 1937	103	6,068,081
15th March, 1937	102	7,897,346
31st March, 1937	106	9,856,037
15th April, 1937	102	11,061,099
30th April, 1937	99	11,735,171
15th May, 1937	91	11,354,903
31st May, 1937	92	11,040,989
15th June, 1937	98	11,331,435
30th June, 1937	94	10,312,847
15th July, 1937	83	8,765,706
31st July, 1937	86	8,180,458
15th August, 1937	81	7,350,569
31st August, 1937	80	6,409,783

(14) Letter, dated the 26th October, 1937, from the Tariff Board to Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Calcutta.

With reference to your letter, dated the 16th October, 1937, I am desired to say that the Board will be glad if you could calculate the stocks of sugar in non-reporting factories and bring the figures of actuals and estimates up to the end of September 1937.

2. I am also to enquire whether it will be possible for you to give an estimate of the consumption of sugar in 1936-37. I am to explain that the Board has made enquiries about the movements of sugar and gur and it has been gathered that comparatively little sugar is moved otherwise than by rail or steamer outside one province into another but considerable quantities of gur are moved by road especially from the United Provinces

towards Central India. This may account for the abnormal figures of consumption in the United Provinces which are too high to be creditable.

(15) *Letter, dated the 7th November, 1937, from R. C. Srivastava, Esq., Director, Imperial Institute of Sugar Technology, India, Cawnpore.*

In continuation of my letter, dated the 16th October, 1937, I enclose herewith four copies of each of the following statements:—

(1) Consumption of sugar in the whole of India for 10 years from 1926-27 to 1935-36.

(2) Fortnightly figures of stocks of sugar held at ports and in certain upcountry markets.

2. As regards the monthly figures for stocks with sugar factories (including the non-reporting factories) as promised in my previous letter, these have been calculated for a few months, but they have been found to be inconsistent owing to the available data being insufficient. Whilst it is thus not possible to form even approximate estimates of monthly figures for stocks at factories, a somewhat more reliable estimate can be made of the probable carry-over at the end of the year. Our estimate for the stock of sugar made directly from cane in central Sugar Factories at the end of October, 1937, is 125,000 tons.

3. I am obliged to you for the information you have given in your letter, dated the 26th October, 1937, regarding the movement of gur by road across provincial boundaries.

*Sources of Supply of Sugar required for consumption in India
(November-October).*

Particulars.	1926-27.	1927-28.	1928-29.	1929-30.	1930-31.
	Tons.	Tons.	Tons.	Tons.	Tons.
Initial Stock—					
(1) In ports	83,100	88,300	40,800	50,500	37,100
(2) In principal inland markets.*	..	..	..	..	..
(3) With factories . . .	..	..	..	..	..
Production of sugar—					
(a) Direct from cane . .	62,941	67,684	68,050	89,768	119,859
(b) Refined from gur . .	54,200	53,300	35,200	23,200	29,700
(c) Khandaris	200,000	200,000	200,000	200,000	200,000
Imports of sugar by sea .	734,428	758,933	940,155	908,792	697,621
Imports of sugar by sea into Kathiawar ports.†	..	50,000	78,780	105,840	114,758
Total supply	1,134,669	1,218,217	1,362,985	1,378,100	1,199,038
Re-export of sugar by sea .	23,198	10,777	8,397	4,148	3,691
Imports of sugar by sea . .	762	683	401	460	268
Imports of sugar by land .	34,441	34,494	35,077	36,142	36,876
Closing stock—					
(1) In ports	88,300	40,800	50,500	37,100	37,600
(2) In principal inland markets.	..	..	..	..	..
(3) With factories . . . .	..	..	..	..	..
Total to be deducted . .	146,701	86,754	93,375	77,850	78,435
Quantity consumed to the nearest thousand.	988,000	1,131,000	1,269,000	1,300,000	1,121,000

*Narayanganj, Chittagong, Ghauhati, Bhagalpur, Patna, Bareilly, Muttra, Ambala, Jullundar, Amritsar, Peshawar, Vizianagaram, Rajahmundry, Cochin, Calicut, Vizagapatam, Coconada.

†The figures for the years 1927-28 to 1930-31 relate to "Imports of sugar into B.I. by land through Kathiawar" only.

Particulars.	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.
	Tons.	Tons.	Tons.	Tons.	Tons.
Initial Stock—					
(1) In ports	31,150	19,176	9,057	21,630	11,189
(2) In principal inland markets.*	..	..	..	8,366	7,994
(3) With factories . .	..	..	..	..	..
Production of sugar—					
(a) Direct from cane . .	158,581	290,177	453,965	578,115	932,100
(b) Refined from gur . .	61,990	77,995	64,890	43,500	47,876
(c) Khandsaris	250,000	275,000	200,000	150,000	125,000
Imports of sugar by sea . .	443,200	324,400	245,300	200,100	93,800
Imports of sugar by sea into Kathiawar ports.†	93,000‡	64,000‡	87,094	113,400	45,200
Total supply	1,038,281	1,050,748	1,060,306	1,115,111	1,263,159
Re-export of sugar by sea . .	4,414	3,587	11,900	2,157	6,206
Imports of sugar by sea . .	382	356	434	357	449
Imports of sugar by land . .	32,000	31,957	30,607	29,939	27,667
Closing stock—					
(1) In ports	19,176	9,057	21,630	11,189	23,684
(2) In principal inland markets.	..	..	..	7,994	5,330
(3) With factories . . . .	..	..	..	..	130,000
Total to be deducted . . .	55,972	44,957	64,571	51,636	193,336
Quantity consumed to the nearest thousand.	1,182,000	1,006,000	996,000	1,063,000	1,070,000

*Narayanganj, Chittagong, Ghauhati, Bhagalpur, Patna, Bareilly, Muttra, Ambala, Jullundar, Amritsar, Peshawar, Vizianagaram, Rajahmundry, Cochin, Calicut, Vizagapatam, Coconada.

†The figures for the years 1927-28 to 1930-31 relate to "Imports of sugar into B. I. by land through Kathiawar" only.

‡Figure relate to official year April to March.

Total fortnightly stocks of sugar at the important Indian Markets of Calcutta, Bombay, Karachi, Madras and Rangoon in 1935-36.

For the week ending—	Stocks in tons.
11th October, 1935	12,998
25th October, 1935	13,151
2nd November, 1935	11,189
15th November, 1935	19,903
29th November, 1935	24,581
13th December, 1935	33,706
27th December, 1935	28,039
10th January, 1936	37,606

For the week ending—	Stocks in tons.
24th January, 1936	40,738
7th February, 1936	44,571
22nd February, 1936	43,535
7th March, 1936	41,836
20th March, 1936	40,036
3rd April, 1936	40,057
17th April, 1936	41,329
1st May, 1936	+ 23,489
15th May, 1936	36,602
29th May, 1936	36,413
12th June, 1936	32,443
26th June, 1936	29,194
10th July, 1936	27,881
24th July, 1936	26,771
7th August, 1936	26,029
21st August, 1936	24,391
4th September, 1936	21,869
19th September, 1936	27,362

Total fortnightly stocks of sugar at Indian important markets of Calcutta, Bombay, Karachi, Madras and Rangoon in 1936-37.

For the week ending—	Stocks in tons.
2nd October, 1936	28,428
16th October, 1936	25,294
30th October, 1936	22,002
20th November, 1936	23,604
4th December, 1936	23,639
18th December, 1936	23,965
2nd January, 1937	21,992
15th January, 1937	20,040
29th January, 1937	19,075
12th February, 1937	22,352
26th February, 1937	18,420
12th March, 1937	18,332
2nd April, 1937	34,277
23rd April, 1937	33,892
7th May, 1937	34,274
20th May, 1937	34,470
4th June, 1937	31,221
18th June, 1937	29,491
2nd July, 1937	29,758
15th July, 1937	23,845
30th July, 1937	29,608
18th August, 1937	29,046
27th August, 1937	28,837
10th September, 1937	27,282
24th September, 1937	26,039

*Statement showing fortnightly stocks of sugar held at the Internal markets
from October, 1936, to September, 1937.*

For the week ending—	Stocks in tons.
17th October, 1936	3,879
31st October, 1936	5,593
16th November, 1936	2,491
27th November, 1936	3,871
15th December, 1936	2,113
30th December, 1936	2,495
14th January, 1937	3,386
29th January, 1937	4,409
15th February, 1937	5,193
28th February, 1937	6,872
15th March, 1937	5,817
31st March, 1937	5,541
17th April, 1937	14,997
30th April, 1937	16,856
15th May, 1937	19,237
30th May, 1937	18,147
15th June, 1937	18,724
30th June, 1937	19,660
17th July, 1937	18,525
31st July, 1937	17,245
15th August, 1937	18,100
31st August, 1937	15,215
15th September, 1937	15,293
30th September, 1937	14,599

The above figures includes mostly the stocks for the following markets:—

Peshawar, Amritsar, Jullundar, Ambala, Delhi, Muzaffarnagar, Muttra, Bareilly, Patna, Chittagong, Gauhati, Vizianagaram, Vizagapatam, Coconada, Rajahmundry, Cochin and Calicut.

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- (16) *Letter, dated the 11th October, 1937, from the Tariff Board to R. C. Srivastava, Esq., Director, Imperial Institute of Sugar Technology, Cawnpore.*

In your review of the Sugar Industry of India during the official year 1935-36 a table was published giving the first cost quotations for superior Java white sugar and Rupee/Guilder exchange rate (for west coast ports of India) upto 27th March, 1936. As the information is helpful in the present enquiry, will you kindly bring the table upto date and furnish the Board with a copy at an early date?

- (17) *Letter, dated the 28th October, 1937, from R. C. Srivastava, Esq., Director, Imperial Institute of Sugar Technology, Cawnpore.*

As desired in your letter, dated 11th October, 1937, I send herewith a statement giving the first cost quotations for Superior Java White sugar brought up-to-date as far as available.

First cost quotations for superior Java white sugar (for west coast ports of British India. C. & F. Bombay).

Date.	Guilder per 100 kilos.	Exchange Rates.
17th April, 1936	3.90	55½
1st May, 1936	3.90	55½
29th May, 1936	3.80	55½
5th June, 1936	3.80	56½
23rd June, 1936	3.80	56½
10th July, 1936	3.60	56
24th July, 1936	3.55	56
7th August, 1936	3.55	56
21st August, 1936	3.55	56½
4th September, 1936	3.55	55½
18th September, 1936	3.55	55½
9th October, 1936	4.30	68½
23rd October, 1936	4.25	68
20th November, 1936	4.07½	68½
27th November, 1936	4.07½	68½
4th December, 1936	4.07½	68½
18th December, 1936	5.32½	68
18th January, 1937	5.42½	68
5th February, 1937	5.42½	67
19th February, 1937	5.62½	67½
5th March, 1937	5.62½	67½
19th March, 1937	5.62½	66½
2nd April, 1937	5.62½	67½
16th April, 1937	5.62½	67½
29th April, 1937	5.62½	68
7th May, 1937	5.62½	68
21st May, 1937	5.72½	68
11th June, 1937	6.95	67½
2nd July, 1937	7.05	67½
16th July, 1937	7.05	68
3rd August, 1937	7.05	68½
20th August, 1937	7.05	68½

(18) Letter, dated the 27th November, 1937, from R. C. Srivastava, Esq.,
Director, Imperial Institute of Sugar Technology, Cawnpore.

I have the honour to forward herewith three extracts from the
"International Sugar Journals" on "Nivas".

EXTRACT FROM THE "INTERNATIONAL SUGAR JOURNAL", No. 407,
NOVEMBER, 1932.

Before the war it was customary for every sugar factory in Java to sell its sugar well ahead of the crop through the intermediary of Java brokers. And as a rule the whole crop, to be harvested from May till November, found purchasers before the season in question commenced.

During the early years of the War the British Royal Commission on the Sugar Supply bought in advance large parcels of Java sugar and thus continued this convenient state of affairs.

But in 1917 the Royal Commission covered its wants from other sources of supply and since other buyers simultaneously withdrew from the market, the Java sugar manufactures were confronted with the unusual experience of possessing unsold stocks. This induced them to try and sell at any price, and in order to prevent prospective buyers from forcing down prices still further, the sugar manufacturers established the Java Sugar Association as a Single Seller of which every holder of sugar became a member. The success of the venture was not remarkable however, since few or no bids came in, either at low or at high prices. Navigation had become so greatly reduced owing to submarine warfare and the wholesale destruction of tonnage (not to mention the needs of the belligerents for troopships) that by 1918 not only was the rather good crop of that year awaiting bids, but also a strong remnant of the 1917 crop.

Since the Allied and Associated Powers thus greatly hampered mail and cable services between Java and her mother country and so rendered impossible any regular co-operation between the owners and the delegates, it was thought advisable to transfer the selling centre to Amsterdam.

Accordingly, a new body was established in August, 1918, the United Java Sugar Producers (V. I. S. P.), in which about 90 per cent. of the total sugar production was incorporated. This association was originally intended to accept, as a single seller, bids for the unsold stock of the 1917 and the whole of the 1918 crops, but as the members were greatly pleased with the conduct of operations on the part of the Board, the association was continued year by year till 1932.

The association had been established under heavy pressure and at very short notice, as an emergency measure; it was only intended as a palliative to tide over bad times, and consequently its constitution and bye-laws did not enter into details and did not foresee those untoward circumstances and events which sprang up a number of years later.

In the event, the exigencies of the various markets underwent considerable fluctuations; moreover, the quantity of sugar of different assortments confided to the care of the selling agency gradually surpassed the demands of the markets to be supplied and eventually, instead of enjoying complete sales in advances as had been the case in the 1919 to 1930 seasons, Java was again compelled to store unsold stocks, which amounted to 282,000 tons at March 31st, 1930, to 688,000 tons in 1931, and to 1,632,000 tons in 1932.

This state of affairs naturally gave rise to some discontent, especially as prices fell steadily and finally ceased to be remunerative. A few members left the association at the end of 1931, while a considerable number of them expressed their intention not to continue their adherence after December, 1932.

There was consequently a serious risk that the V. I. S. P. would go out of commission at the end of this year, so in order to prevent a collapse of the Java Sugar Market and wholesale under bidding by anxious holders of stocks, the Netherlands Indian Government just lately convened a meeting of Government officials with representatives of the producers, bankers and exporters with a view to arriving at a mutual agreement in the matter of a new selling organization.

One gathers that the general feeling was in favour of the transfer to Java of the selling authority of at least the sugar for Eastern destinations, but opinions differed on the question whether the new organization was to start with the sale of the 1932 crop, or to extend its operations also to the remnants of the 1931 one. This question proved indeed a bone of contention, since the V. I. S. P. was still in possession of some unsold stock, whereas the other parties, who had already disposed of all their 1931 sugar, did not want to be encumbered with the old stock of erstwhile competitors, now to become associates. Other differences of minor importance had also to be taken into consideration, but in the end of the Government advisers pronounced for the institution of a Single Seller, having its location in Java. A representative of the Java Bank will be one of the members of the Board. The interests of all parties will of course have to be safeguarded, and the Government and the planters will discuss annually the area to be devoted to cane.

It seems very likely that the Government will follow this advice and take early steps to pass the necessary legal measures authorizing the scheme.

EXTRACT FROM THE "INTERNATIONAL SUGAR JOURNAL", No. 410,
FEBRUARY, 1933.

The New Java Single Seller.

On January 1st the N. I. V. A. S., which is the abridged form of name for the new "Nederlandsch Indische Vereeniging voor de Afzet van Suiker" commenced operations in Java in place of the defunct V. I. S. P. It had been formed by the Government after prolonged negotiations with the interested parties in Java, including the small minority who having no stocks left did not wish to be pooled with the other stock-holders. This minority raised a number of objections which seem to have come to a head when the People's Council finally debated the terms of the measure during the last few days before Christmas, and a number of drastic amendments were carried, radically altering the character of the Bill. This was carried as amended by the narrow majority of 27 to 25 votes. But as the People's Council has not any legislative power, it was left to the Government to decide how far to accept the alterations. It would appear that the latter have stuck to their original proposals save for a few alterations which seem destined to strengthen the hold of the Government on the operations of the "Nivas". Anyhow, the Government Plan was finally accepted on December, 31st, by the People's Council, so this new Single Control came into operation at the beginning of the new year and is now controlling all sales of Java sugar, conveyance of sugar being henceforward only legal if covered by a Transport Licence.

The seat of the new controlling body is at Soerabaia, but a Sales Director has also been appointed to work in Amsterdam. The President of the Board is Mr. E. J. Van Goor, formerly agent of Messrs. Mirandolle, Voute & Co., and President of the Soerabaia Commercial Association. He had previously been adviser to the "Visp" at Amsterdam. The Government has two representatives on the Board of Control with a right to veto decisions. The net result is that for the time being the Java Sugar Industry is 100 per cent. controlled by a single authority.

EXTRACTS FROM THE "INTERNATIONAL SUGAR JOURNAL", No. 408,
DECEMBER, 1932.

The Java Single Seller.

As was detailed in our pages last month, the local Government in Java decided on institution of a new Single Seller to take over the operations

of the "Visp" at the end of the year. The new proposals crystallised are: The management is to be centred in Java; it is to include a representative of the National Bank; the interests of the small producers are to be protected by a special arrangement; and the area to be planted with cane is to be subject each year to negotiation between the Government and the interested parties.

The home Government in Holland had, however, to be consulted before the scheme could be passed into law; but the Dutch Minister for the Colonies having had the particulars placed before him has been able to give his consent without delay, so the Java Government proposals are to be carried out. The decision will greatly facilitate the prompt settlement of some difficult details with the representatives of the sugar industry in Java. As Mr. Moet of Soerabaya points out in a recent circular, the new organization will consist of 85 per cent. of all the Java mills owners of about 3 million tons of 1931 and 1932 sugar (the old "Visp" members) and of 15 per cent. of formerly non-associated mills who now hold practically no sugar. Up till next April things will work smoothly enough. But once the grinding of the 1933 crop starts, these fortunate outsiders will demand their due percentage of all the sales. Java thus cannot sell sugar from three crops without creating abnormal conditions. A *modus vivendi* will have to be found and possibly the three crops will be pooled and the proceeds be divided *pro rata* amongst all the members.

Discussing those three million tons, this Java commentator remarks that the whole world knows that Java is overstocked. No improvement in sugar is possible till a fair share of these stocks has been cleared. These three million tons are thus a warning to dealers and speculators of the world at large not to touch the article for the time being, for they exceed the Java quota for 1933 originally fixed at 2½ million tons which latter quantity is far more than Java can ever hope to sell, at anywhere near normal price limits.

This somewhat pessimistic view is not, however, shared by other market commentators. Thus Mr. Golodetz had earlier pointed out that the big cuts in Java's new production, in conjunction with the proposed vast crop restriction in Cuba, have always been intended to offset the evil of large excess supplies in Java. "Opinions which emphasize the statistical strength of sugar from a long range standpoint have already discounted the huge surplus stocks in Java." Of course it is necessary for the scheme that co-ordinated selling shall continue in Java, but this factor is now assured, so one more bearish influence has apparently been removed from the market.

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(19) Letter, dated the 24th November, 1937, from R. C. Srivastava, Esq., Director, Imperial Institute of Sugar Technology, India.

As desired by you, I enclose herewith a statement showing the imports and exports of gur by rail and river in the provinces for the years 1934-35 and 1935-36. The monthly accounts relating to the inland (rail and river borne) trade of India for the year 1936-37 are not available in my library. I regret I am, therefore, unable to supply you immediately with a statement of imports and exports of gur for the year 1936-37.

As regards the difference between the net production of gur in Bihar and Orissa during the years 1934-35 and 1935-36, I may explain that the gross production of gur in Bihar and Orissa from which the net production has been calculated by deducting the gur equivalent of cane used in factories, etc., has been almost the same in two years, namely 873,000 tons and 886,000 tons respectively in 1934-35 and 1935-36. On the other hand the quantity of cane crushed in the factories in Bihar and Orissa has increased from 2,092,884 tons in 1934-35 to 2,803,000 tons in 1935-36. The difference between the net production of gur in the two years is principally due to this.

Enclosure.

Imports and exports of gur, rab, molasses, etc., into and from the Provinces.

Period :—November—October.

	1934-35.		1935-36.	
	Imports.	Exports.	Imports.	Exports.
	Tons.	Tons.	Tons.	Tons.
United Provinces	19,094	295,136	10,330	391,166
Punjab (including N. W. F. P. & Delhi).	105,037	8,164	127,580	6,386
Bihar and Orissa	7,865	77,403	63,338	70,203
Bengal	67,733	4,879	42,532	9,113
Madras	12,964	15,864	16,208	24,689
Bombay	57,143	14,201	56,296	20,072
Assam	8,556	166	10,706	238
Central Provinces and Berar .	39,602	259	46,492	237
Sind and British Baluchistan	16,282	216	26,786	108
Mysore	1,109	7,251	6,840	17,932
Hyderabad	8,137	803	7,090	392
Rajputana	70,074	100	73,974	107
Central India	22,521	472	23,205	655
Kashmir	1,736	46	1,344	—

The Trade of the Indian States which lie within the external boundaries of a British Province is included in the trade of that province.

(20) *Letter, dated the 25th November, 1937, from Mr. R. C. Srivastava, Director, Imperial Institute of Sugar Technology, Cawnpore.*

During my recent visit to Calcutta, Sir Geoffrey Bracken asked me whether I felt that sugar refineries (working with gur) should be treated differently in the matter of excise duty, and if so, why. I have now examined this question from the point of view of the cost of production of sugar and the return in terms of the cane originally converted into gur. I find that the refining industry when examined from this point of view, stands on a level with the khandsari industry. It therefore deserves to be treated on the same basis as the khandsari industry.

2. The advantages of the refining industry are principally as follows:—

(a) It provides a market for gur made from cane which is surplus to the requirements of cane factories.

- (b) Gur refining when undertaken by cane factories during their non-crushing period pays for part of the overhead charges and to that extent helps in lowering the cost of production of sugar.
- (c) There are certain markets (*e.g.*, Rajputana and Central India) where gur refined sugar is in special demand.

SELF-CONTAINED NOTE REGARDING COST OF PRODUCTION AND FAIR SELLING PRICE OF SUGAR, PREPARED AND FORWARDED BY R. C. SRIVASTAVA, ESQ., DIRECTOR, IMPERIAL INSTITUTE OF SUGAR TECHNOLOGY, CANNORE.

The present note deals with the calculated cost of production of sugar and its fair selling price under the present conditions. For comparison the calculations made by the previous Tariff Board are summarised first.

Basis adopted by the Tariff Board of 1930.

The Tariff Board based their calculations on the following data for a typical Indian factory:—

- (1) *Process*.—Sulphitation.
 (2) *Capacity*.—13 lakh maunds cane per season.
 (3) *Production*.—
 (a) Initial—

	Mds.
Sugar	117,000
Molasses	82,000

(b) Final—	
Sugar	122,200
Molasses	52,000

- (4) *Recovery*.—
 (a) Initial—
 9 per cent. sugar on cane.
 4 per cent. molasses on cane.
 (b) At the end of protective period—
 9·4 per cent. sugar on cane.
 4·0 per cent. molasses on cane.

- (5) *Prices*.—
 (a) Initial—
 Cane 8 annas per maund delivered at factory.
 Molasses Rs. 1·8 per maund *ex-factory*.
 (b) At the end of the protective period—
 Cane 6 annas per maund delivered at factory.
 Molasses Re. 1 per maund *ex-factory*.

- (6) *Capital cost of factory*.—

	Rs. lakhs.
Plant	10
Buildings	3·5
Total	13·5

- (7) *Working Capital*.—Equal to works cost of production of one-third of the seasons' output of sugar. This amounts to Rs. 3 lakhs in initial stages and Rs. 2·5 lakhs at the end of protective period.

Interest at 7 per cent. on the Working Capital is charged.

- (8) *Depreciation*.—

Plant 5 per cent. on 10 lakhs.

Buildings 2½ per cent. on 3·5 lakhs.

- (9) *Normal profit*.—10 per cent. on Capital cost of 13·5 lakhs.

The cost of production and fair selling price of sugar (excluding excise duty) on the basis of the above data, for the initial and final stages of protection are shown in Table I.

Modifications required under present conditions.

The basis adopted by the previous Tariff Board needs modification now in the following respects due to changed marketing conditions for sugar, molasses and cane, to the improvement in efficiency and to discrepancies in the data originally supplied to the Board.

(1) *Capacity*.—The average capacity of a sugar factory at present is between 500 and 550 tons of cane per day. The working season now extends over 130 to 140 days of actual crushing. For the purpose of the present calculations, the capacity of a typical factory has been taken as 500 tons of cane and the duration of season as 130 days actual working. The quantity of cane crushed during the season will therefore be 65,000 tons or 17 lakhs 68 thousand maunds or say 18 lakhs maunds.

	Mds.
(2) <i>Production</i> .—	
Sugar	1,71,000
Molasses	63,000

- (3) *Recovery*.—

9·5 per cent. sugar on cane.

3·5 per cent. molasses on cane.

- (4) *Prices*.—

Cane 5 As. 6 p. per maund delivered at factory.

Molasses 2 As. per maund *ex*-factory.

(No allowance need be made for any return from molasses.)

- (5) *Capital cost of factory*.—

	Rs. Lakhs.
Plant	10
Buildings	4
	—
Total	14
	—

For arriving at this figure for Capital Cost, the value of the block account of a number of factories which have sent their balance-sheets to this office has been tabulated in the statement given in the appendix to this note. The actual cane crushing capacity of each of these factories during the last three seasons has also been shown in the statement.

19 factories out of those given in the above statement have capacities ranging between 450 and 600 tons. The value of the net block account (after deducting depreciation) as shown in the balance-sheets for 1936 together with the daily crushing capacity (average for the last 3 seasons) for these factories are shown in Table II. It will be observed that the average value of block account is Rs. 13.26 lakhs and the average crushing capacity is 543 tons cane per day. It is quite fair therefore to take the figure of 14 lakhs for block account for a factory of 500 tons capacity.

(6) *Working Capital*.—This has been taken as equal to works cost of production of one-third of the seasons' output of sugar. This amounts to Rs. 284,000.

Interest has been reckoned at 5 per cent. on the above working capital and amounts to Rs. 14,250 per year.

(7) *Depreciation*—

Plant 5 per cent. on 10 lakhs.

Buildings 2½ per cent. on 4 lakhs.

After examining the schemes prepared in this Institute for a number of factories, it appears that actually the distribution of capital investment between Plant and Buildings will give a slightly lower figure for the value of Plant and a higher figure for the value of the Buildings.

In Table III are shown revised figures for cost of production and fair selling price of sugar calculated after allowing for above modifications of the conditions accepted by the previous Tariff Board. It will be observed that the manufacturing expenses (that is, Works Cost, less cost of raw material) amounts to Re. 1-6-3 per maund of sugar. Depreciation and Interest come to 7 As. making a total of Rs. 1-13-3 per maund of sugar. The total cost of production of sugar (including the cost of cane) comes to Rs. 5-7-0. Allowing profit at 10 per cent. on 14 lakhs (equivalent to 13 As. per maund of sugar) the Fair Selling price ex-factory without Excise duty comes to Rs. 6-4-0.

Freight Advantage.

The freight from Bihar and United Provinces factories to important port markets (excluding Calcutta) amounts to about Rs. 1-1-6 per maund. Allowing half of this as freight advantage for factories, the amount to be added will be between 8 As. and 9 As. or say 8 As. 6 pie.

Landed cost of Java Sugar.

Exact figures in this connection are not available specially as the cost of production of sugar in Java varies from factory to factory depending on the cost of cultivation of cane, the sucrose content of cane, the manufacturing efficiency of factories and the operating expenses. It is believed that when the Java sugar industry was curtailed, only the most efficient factories continued to work and their cost of production was particularly low. From such information as is available, it is understood that under the present working conditions, the average cost of production of sugar in Java varies between 3.50 and 4.00 guilders fl. per 100 kilos or an average of 3.75 guilders per 100 kilos. This corresponds to Rs. 2-5-1 per maund of sugar. The freight, dock dues and other transport charges amount to 6 As. to 7 As. per maund or say an average of 6 As. 6 pie per maund. The landed c.i.f. cost of Java sugar at Indian ports may, therefore, be taken as Rs. 2-11-7 per maund exclusive of duty and profit to the manufacturer.

TABLE 1.—Cost of production and fair selling price of sugar according to Tariff Board.

Particulars.	According to Tariff Board.	
	Initial stage of protection (per md. sugar).	Final stage of protection (per md. sugar).
	Rs. A. P.	Rs. A. P.
1) Cane	5 8 10	4 0 0
(2) Other raw materials	0 2 0	0 2 0
(3) Labour	0 8 0	0 7 6
(4) Power and Fuel	0 1 3	Nil
(5) Supervision, office charges and establishment	0 11 3	0 10 11
(6) Current repairs	0 7 0	0 6 7
(7) Packing	0 2 9	0 2 9
(8) Miscellaneous (excluding interest)	0 10 0	0 9 7
(9) Gross works cost	8 3 1	6 7 6
Deduct—Price of molasses	0 10 8	0 6 9
Net works cost	7 8 5	6 0 9
Add—Depreciation	0 8 0	0 7 8
Interest on working capital	0 2 10	0 2 4
Total cost of production	8 3 3	6 10 9
Add—Profit at 10 per cent. on 13·5 lakhs	1 2 6	1 1 8
Fair selling price <i>ex-factory</i> (excluding excise duty)	9 5 9	7 12 5

TABLE II.—Block account and crushing capacities of factories of 450 to 600 tons capacity.

	Net Block account (1936).	Average daily crushing capacities (for last three seasons).
	Mds.	Mds.
(1) New Swadeshi	11.45	18,400
(2) Shree Radha Krishna	13.56	12,080
(3) Ganga Sugar Works	12.85	15,430
(4) Mahabir Sugar	9.91	14,200
(5) Gujranwala	8.90	11,160
(6) Khatauli	15.58	14,460
(7) Begamabad	11.95	16,130
(8) The Ratna Sugar Mills	11.92	14,800
(9) Shree Sita Ram Sugar Company	13.50	14,930
(10) Lakshmi Devi Sugar Mills	11.17	15,770
(11) Popular Sugar Company	15.16	15,600
(12) The Punjab Sugar Mills	18.97	16,430
(13) The Jaggit Sugar Mills	13.94	15,230
(14) Upper Jamuna	16.38	15,230
(15) The Burma Sugar Company	13.69	15,630
(16) Vishnu Sugar Mills	15.30	15,430
(17) Mahabir	10.07	14,130
(18) Japha Sugar Factory	6.96	10,130
(19) H. R. Sugar Factory	20.77	15,770
Total	252.03	280,940
Average	13.26	14,790 mds. or 543 Tons.

TABLE III.—*Revised figures for cost of production and fair selling price of sugar.*

	Per md. sugar.
	Rs. A. P.
(1) Cane	3 9 9
(2) Power, Fuel and Stores	0 4 3
(3) Salaries and Wages	0 9 0
(4) Packing	0 2 0
(5) Repairs and Renewals	0 2 3
(6) Management charges (e.g., Managing Agency Commission) at Rs. 18,000 per year.	0 1 9
(7) Miscellaneous (insurance brokerage, etc.)	0 3 0
Gross works cost	5 0 0
Deduct—price of molasses	0 0 0
Net works cost	5 0 0
Add—depreciation	0 5 7
Interest on working capital	0 1 5
Total cost of production	5 7 0
Add profit at 10 per cent. on 14 lakhs	0 13 0
Fair selling price ex-factory (without excise duty).	6 4 0

Replies received from the Imperial Sugar Cane Station, Coimbatore.

- (1) *Letter, dated the 15th May 1937, from the Tariff Board, to the Sugarcane Expert, Imperial Sugarcane Station, Coimbatore.*

In connection with the enquiry referred to the Tariff Board as to the extent of protection required for the Indian Sugar Industry during the period from 31st March, 1946, I am directed to say that the Tariff Board will be glad to have a note, with six spare copies, if possible, regarding research undertaken at the Imperial Sugarcane Station during the last seven years on the production of improved varieties of sugarcane suitable for cultivation in India.

2. The Tariff Board propose to visit Coimbatore about the 1st week of July for recording formal evidence.

(2) *Letter, dated the 23rd June, 1937, from the Government Sugarcane Expert, Imperial Sugarcane Station, Coimbatore.*

With reference to your letter, dated the 15th May, 1937, I have the honour to submit herewith three copies of a note prepared as desired therein. Another set of three copies will follow to-morrow.

In the note I have made references to a published article. As the number of copies is rather limited I am attaching this to four copies of my note.

Enclosure.

RESEARCH WORK AT IMPERIAL SUGARCANE BREEDING STATION, COIMBATORE, ON THE BREEDING OF IMPROVED SUGARCANES FOR INDIA, 1930 TO 1937, WITH SEPARATE NOTE BY SECOND CANE BREEDING OFFICER—MR. N. L. DUTT, M.Sc., ON THICK CANE BREEDING.

I. Introduction.

It needs to be mentioned at the outset that the research work for breeding improved canes suitable for the various parts of India has been a continuous process from the inception of the station in October 1912. Leaving for the moment the main and continuous lines of research that have had their beginnings at the starting of the station and still continue to form the ground work of all its activities, an attempt will be made in this note to throw into relief the main items of progress during the period 1930 to 1937 (both inclusive).

II. Position in 1930.

It will be useful to indicate here in very brief outline the position of the Indian Sugar Industry and the stage of progress of research reached at Coimbatore by the year 1930, the first year of the septennial period covered by this note. The area under sugarcane in the country was practically the same as in 1920 when the Sugar Committee reported, viz., about two and three quarter million acres. As the result of Coimbatore work the important sugarcane provinces of North India, viz., the United Provinces, Bihar and the Punjab, had in their possession and in partial cultivation in their areas Coimbatore canes easily superior to the indigenous kinds and, therefore, beginning to spread in those provinces. It was reported to the Tariff Board of 1930 by the provinces in Sub-tropical India that an increase of yield of 50 to 100 per cent. might well be expected from the Coimbatore canes (pages 17 and 18). This enabled that Tariff Board to assume that the needed raw material for a full development of the Industry was available in the country and this has since been fully justified. Tropical provinces like Madras and Bombay, on the other hand, had yet derived little benefit from the Coimbatore work, as the breeding of tropical types had only just then (1926) been commenced at Coimbatore.

In the year 1930, therefore, the Coimbatore Station might in a way be said to have obtained possession, through research, of both methods and material by which to produce improved canes for desired tracts. But the very spread of these canes and the phenomenal development of the Indian Sugar Industry, that directly followed from the protection afforded to it, brought in a variety of problems for solution, the more important of which are noticed below.

III. The Problems as presented in 1930.

(a) *General.*—During the general agricultural depression that was prevalent at the time, the sugarcane was very eagerly sought after by the cultivator as a useful crop for relieving his condition. This led to a very rapid extension of the sugarcane area, sometimes, regardless of the conditions

—suitable or otherwise—of soil and climate. The conditions for which Coimbatore had to breed thus became wider and the demands of the growers and the Testing Stations more exacting. It was not uncommon to hear it mentioned that, whereas the yield from Coimbatore productions was distinctly higher and therefore their cultivation more profitable to the growers, the canes nevertheless possessed certain defects which needed to be remedied as quickly as possible to satisfy the needs of a rapidly growing indigenous industry. The industry had begun to visualize its problems and thus became more exacting on the only Sugarcane Breeding Station in British India.

The growth of the White Sugar Industry brought in special problems for solution. One such was the production of canes both "earlier" and "later" than extant kinds. This was desired for extending the factory crushing season and thus lower overhead charges. This is of special importance to factories in Sub-tropical India where, owing to climatic conditions, the period of satisfactory juice quality in the cane is limited.

There was a widespread feeling in the country that attempts should be made to grow the new seedlings under Sub-tropical conditions even from the very early stages. It was considered possible that types useful for Sub-tropical India might be lost in the present process of making the selections under the tropical conditions of Coimbatore during the first year of growth of the new seedlings. Other problems presented by the Industry at the time for solution were:—

- (1) breeding of canes that would not lodge in cultivation,
- (2) breeding of canes that would not flower freely, a major disadvantage under Tropical conditions, and
- (3) breeding of canes that would resist pests and diseases and other adverse conditions.

(b) *Thick Cane Breeding*.—Secondly, the improvement of the thick type of canes grown in the tropical parts of India was practically untouched as the much younger section of the Coimbatore Station, viz., that devoted to the breeding of thick canes, was then just beginning to feel its way by sending out for testing to the Provinces its most promising productions. The breeding of thick canes is, in certain respects, different from that of Sub-tropical types and presented certain special problems for solution.

(c) *Transferring Coimbatore Results to Growers' Fields*.—A third problem was the building up of an organisation for taking full advantage of the breeding work at Coimbatore and elsewhere and arranging for the proper testing and distribution of the useful types into cultivation. This is a work of major importance for the proper development of the Sugar Industry and has been effectively tackled by the Imperial Council of Agricultural Research through their Sugar Committee, who, besides making out a strong case for protection, quickly set about the task of founding in the sugarcane belts of India quite a chain of properly equipped Sugarcane Testing Stations. Though Coimbatore is but indirectly connected with this important line of advance, it is nevertheless mentioned here just to complete the picture.

IV. Scope of the present note.

This note will cover items (a) and (b), the latter represented by a separate note prepared by Mr. N. L. Dutt, M.Sc., the Second Officer.

V. Salient Features in Sugarcane Breeding.

Very briefly stated, the plan of breeding sugarcanes is as below:

Whereas the ordinary sugarcane grower raises his crop from cuttings, the breeder grows plants from sugarcane seeds. Thus grown the plants show wide variations, no two of them being alike, and all are different from the parents as well. The sugarcane breeder takes advantage of this variation

and selects for further propagation such of the seedlings as show the characters desired. As this subsequent propagation is from cuttings—not from seed—the desirable qualities for which the plant was first selected continue more or less intact in the resultant crop. Separate Note explaining the central facts connected with sugarcane varieties is herewith attached.

The cane breeder who wishes to improve on existing canes has, therefore, to gather together for hybridization parents that are known to possess certain desirable character or characters and raise hybrids on a mass scale to exploit to the full expected variations in the seedlings. Any device which would increase this variation is a great asset to the sugarcane breeder.

VI. Progress in Research.

The main lines of advance in research recorded during the seven year period are briefly mentioned below:

Widening Range of Parents.—From the very beginning the Coimbatore work had been based on working with as wide a range of parents as possible for hybridization. It was the first sugarcane station in the world to deliberately use the wild *Saccharum spontaneum* for crossing with the cane. India is rich in these types and the station has been steadily adding to its material from the whole of India and Burma and from foreign countries like Java, Sumatra and Central Turkestan. These generally introduce a deeper root system and greater resistance to certain pests and diseases and other adverse conditions. The Java type of *Saccharum spontaneum*, for instance, is known to yield canes resistant to the much dreaded "mosaic" disease. Certain most popular new canes bred both in Java and at Coimbatore possess this wild blood in varying degrees.

In 1930 Coimbatore succeeded in crossing the cane with Sorghum (Jowar) and this has since been successfully repeated in Hawaii, Java and Florida. During the season just past (1936) success was again obtained in crossing the cane with the Bamboo—two parents which are wider apart than the already recorded successes in this type of hybridization among plants in general. It is too early to judge the economic results that might result from these ventures; but there is little doubt that they have opened up new lines of great scientific value and might yet give a new orientation to sugarcane breeding in general.

Knowledge of Parents.—It has been mentioned that the breeding of both "early" and "late" canes is desired by the white sugar factories to extend their crushing season. The period has brought to light certain parents like Co. 508 and Co. 354 (a sorghum hybrid) as definitely yielding "early" canes. The use of *S. arundinaceum*—one of the biggest forms of the wild *Saccharum*—as parent is indicative of its value in the breeding of "late" types. Co. 421 (a production from the Thick Cane Area) and Co. 331 (a recent seedling found useful in Sub-tropical India) have proved their use in producing vigorous (i.e., high tonnage) canes. Other parents have been found that transmit good habit (i.e., absence of lodging) to the seedlings raised from them.

Mass Production of Hybrids.—Variety of devices, somewhat of a technical nature, have been evolved during the period for raising new seedlings *en masse*—a hundred or two hundred thousands if need be. The utility of this in sugarcane breeding has already been mentioned.

Growing new Seedlings under North Indian Conditions from early Stages.—The general desire of the provinces in this matter has already been mentioned. During the period under reference, the Coimbatore Station has been trying to meet this desire by sending out seeds, preserved in an atmosphere of CO_2 , and also live seedlings specially hardened for the journey and loaded in through railway wagons to Testing Stations in North India. This kind of work has been in progress at Shahjahanpur and at the Sugarcane Sub-station, Karnal, from the year 1932. As yet no appreciable

advantage has resulted, but the period of experimentation is too short for a valid judgment.

Testing and Selection of Useful Canes.—With the experience of over a couple of decades at Coimbatore and the knowledge gained by visits to sugarcane stations in various parts of India, a fairly simple method has been outlined for the testing and selection of useful canes at the various Sugarcane Testing Stations. The Coimbatore Station is now able to keep up a fairly constant stream of new canes for distribution to the provinces and methods of trial and selection at the Testing Stations are of importance for translating the work at Coimbatore into vigorous and healthy crops on the growers' field. The Sugarcane Sub-station at Karnal, the only one in Sub-tropical India under Coimbatore control, has been useful in maintaining a somewhat direct touch between Coimbatore and growth conditions in Sub-tropical India.

Study of bud sports with the object of improving on existing types and the inducement of such sporting through special treatment has been receiving some attention; but for securing the desired variation, hybridization with as wide a range of parents as possible continues to be yet the most promising line of advance.

NOTE ON THE PROGRESS MADE IN THE BREEDING OF THICK CANES FOR INDIA FROM 1930 TO 1937, by N. L. DUTT, M.Sc., SECOND CANE BREEDING OFFICER.

The able manner in which the Sugar Tariff Board of 1930 have drawn attention to the importance of breeding thick canes for India renders it unnecessary to explain why this type of work was started at Coimbatore or give the justification for the detailed experiments carried out and the patient labour involved in producing the results that are hereunder described.

The work of breeding thick canes was started in 1926 and is, therefore, comparatively young. The excellent work carried out at the main station for the breeding of Sub-tropical types has been a source of great inspiration to the young section at the Thick Cane Area. But the young section has had to solve its own difficulties not only because it had to breed canes for parts of India different from those of the main station, but also as it had to deal with an entirely different class of canes. For one thing, the main station when it started breeding work for North India had to replace canes whose average yield was only 10 or 11 tons of cane per acre; and when it produced canes which easily gave 20 or 25 tons of cane per acre the fact was hailed, justifiably, as a great advance. The work at the Thick Cane Area, on the other hand, has had from the very start to compete with canes which ordinarily yield 25 to 30 tons per acre. Further, the task of breeding thick canes is, from technical point of view, relatively more difficult. The germination of thick cane seed is poor and the young seedlings are more delicate as compared with those of thin or medium canes and the pollen (*i.e.*, the male element concerned in fertilisation) of thick canes germinates less satisfactorily than that of most thin canes. These are not small difficulties, but they have been surmounted and a special technique has been developed. The list of publications (Appendix I) will give some idea of the type of work with which the scientific staff have been busy to solve these initial difficulties of technique.

At the time of the visit of the 1930 Tariff Board there was little to report in connection with thick cane breeding except that much preliminary ground had been covered and spade work done. It will be seen from the attached Table (Appendix II) that the distribution of the thick Coimbatore canes began with the period now under report. This table further gives an idea of the number of crosses effected and the number of seedlings raised.

It will be convenient to discuss the performance of the thick canes batch by batch, commencing from the first, *i.e.*, the one distributed to the Provincial Experiment Stations in 1931. From the first batch the seedling

variety Co. 360 has done well at the Padegaon Research Station in the Bombay Presidency. It has yielded about as much as the famous Java cane, P. O. J. 2878, and is fairly rich in sucrose. From the second batch, Co. 413 has done fairly well in parts of the Coimbatore district as also at Padegaon. Co. 412 has yielded satisfactorily at Samalkot in the Madras Presidency as also at the Experiment Station at Taru Jabba near Peshawar (North-West Frontier Province).

It is in the third batch, *i.e.*, the one distributed in 1933 that the first real advance was made. One of the canes of this batch, *viz.*, Co. 419, has turned out in some respects to be the best cane that has so far been grown in tropical India and Burma. The following reports about its performance will be read with interest:—

Madras.—At Anakapalle, “Four varieties, *viz.*, Co. 419, Co. 313, P. O. J. 2878 and Co. 407, were compared with Co. 213. Co. 419 has topped the list and has given 31·4 per cent. higher yield than the standard Co. 213”.

At Samalkota “Co. 419 and Co. 412 have done remarkably well having respectively yielded 68 per cent. and 20·3 per cent. more cane than J. 247”.

At Palur “Co. 419 stands first and has given the highest tonnage beating the second by as much as 10 tons. The results of Co. 419 and P. O. J. 2878 are so outstanding that these can be safely introduced in the garden lands of this circle”.

(Reports on the work of the Agricultural Stations in the Madras Presidency for 1935-36, pages 8, 78 and 210 respectively.)

Bombay.—“The most promising are Co. 360, Co. 419 and Co. 290 in the first group and Co. 413 and Co. 408 in the second group. Variety Co. 360 has been distributed for testing in different soils”.

(Annual Report of the Department of Agriculture in the Bombay Presidency for the year 1934-35, page 26.)

“Co. 419 has topped the list. The following tentative figures will give an idea:—Co. 419=56·21 tons, Co. 413=46·10 tons, P. O. J. 2878=44·07 tons, Co. 290=42·75 tons, Co. 360=40·47 tons. These figures are averages of six replications. It has been arranged to distribute available setts of Co. 419 to all the factories in the Bombay Presidency. Co. 360 is reported to have yielded up to 60 tons in factories and trial plots. The same has been multiplied by all the factories and will occupy a fairly large area in cultivation. Mill trials will be available next year.”

(Principal Agricultural Officer, Padegaon, in a letter dated the 29th February, 1936, to the writer.)

Assam.—“The notable feature of this year's work on sugarcane is the successful performance of many new Coimbatore varieties which ushers in bright prospects for this crop in the province under suitable organisation. The new varieties, *viz.*, Co. 364, Co. 408, Co. 412 and Co. 413 gave an outturn of a little more than 40 tons of stripped cane per acre whilst the variety Co. 419 gave an outturn of 54 tons stripped cane per acre, the highest outturn ever recorded in the farm.”

(Annual Report of the Department of Agriculture, Assam, for the year 1935-36, page 80.)

Burma.—“A secondary experiment gave most promising results from two new Co. seedlings, Co. 408 and Co. 419, both in tonnage and sucrose surpassing even the Java canes.”

(Report on the operations of the Department of Agriculture, Burma, for the year ended the 31st March, 1936.)

The second significant advance soon followed the first one and was recorded by one of the canes of fourth batch, *viz.*, Co. 421. This cane has done particularly well in a number of Experiment Stations in Sub-tropical India, and is likely to prove a serious rival of the standard varieties in the North. For an idea of the growth of this cane kindly see photographs in

Appendix III. The following reports are a fair indication of the worth of this cane.

Punjab.—"Co. 421 an outstanding cane in nursery has been promoted to the semi-final. From a small area it has given twice as much tonnage as Co. 285."

"Of all the new canes, Co. 385 and Co. 421 deserve special mention. These varieties are vigorous in growth, and withstood frost and drought admirably well."

(Annual Report of Risalewala Sugarcane Research Station, Punjab, for 1934-35 submitted to the Imperial Council of Agricultural Research.)

Bihar and Orissa.—"Co. 421 and Co. 513 mid-season main crop varieties are likely to prove serious rivals of Co. 213."

(Report of the Agricultural Department, Bihar and Orissa, for the period 1st April, 1935, to 31st March, 1936.)

From among the canes of the fifth batch, Co. 432 has erect habit and good growth and has given indications of resisting salinity and might perhaps be useful for usar soils.

The seedlings of the 1936 and 1937 batches are as yet in the multiplication stages at the various Provincial Experiment Stations.

It will be seen from the foregoing that from practically every batch one cane or the other has come up to challenge the extant canes in the various tracts. In Co. 419 and Co. 421 the thick cane station has evolved two very good general purpose canes. If preliminary reports from the Provincial Experiment Stations are any guide these two canes would appear to have registered a very real advance for the good of the Indian Sugar Industry, for pitched against them were such world famous canes as P. O. J. 2878, Co. 213 and Co. 290 whom they have surpassed in performance at many Experiment Stations. In having bred Co. 419 and Co. 421 the task of the Thick Cane Station has only just begun. Both of these are, generally speaking, mid-season canes and the task of breeding equally successful early and late canes has yet to be completed.

The above gives in brief outline the progress made at the Thick Cane Area during the last six or seven years. For whatever results have been achieved it is a great pleasure to acknowledge the invaluable help of my staff. I am also grateful to Rao Bahadur T. S. Venkatraman, C.I.E., for several kindnesses and facilities.

APPENDIX I.

List of Publications from the Second Cane Breeding Officer's Section at the Thick Cane Area, Imperial Sugarcane Breeding Station, Coimbatore.

1. Dutt, N. L. (1927). Phyllotaxis and leaf-obliqueness as separation characters in Seeding canes. *Agric. Jour. Ind.*, Vol. XXII, pp. 186-191.
2. Dutt, N. L. and Ayyar, G. G. (1928). Germination of sugarcane pollen in artificial culture media. *Agric. Jour. Ind.*, Vol. XXIII, pp. 190-202.
3. Dutt, N. L. (1929). Studies in sugarcane pollen with special reference to longevity. *Agric. Jour. Ind.*, Vol. XXIV, pp. 235-244.
4. Dutt, N. L. and Ayyar, K. V. G. (1930). A preliminary note on the chemical composition and the enzymes of sugarcane pollen. *Agric. Jour. Ind.*, Vol. XXV, pp. 31-33.
5. Dutt, N. L. and Krishnaswamy, M. K. (1931). A preliminary note on stigma receptivity in certain sugarcane varieties. *Ind. Jour. Agric. Sci.*, Vol. I, pp. 286-288.

APPENDIX I—contd.

List of Publications from the Second Cane Breeding Officer's Section at the Thick Cane Area, Imperial Sugarcane Breeding Station, Coimbatore—contd.

6. Dutt, N. L. and Krishnaswamy, M. K. (1932). Observations on the male nuclei in sugarcane. *Ind. Jour. Agri. Sci.*, Vol. II, pp. 47-50.
7. Dutt, N. L. and Rao, K. S. S. (1933). Observations on the cytology of the sugarcane. *Ind. Jour. Agri. Sci.*, Vol. III, pp. 37-58.
8. Dutt, N. L. and Rao, K. S. S. (1934). A preliminary note on the membranous body in the cytoplasm as characteristic of the indigenous Indian canes. *Ind. Jour. Agri. Sci.*, Vol. IV, pp. 228-230.
9. Dutt, N. L. and Krishnaswamy, M. K. (1934). The breeding of the thick type of canes for India. *Madras Agri. Jour.*, Vol. XXII, No. 3.
10. Dutt, N. L. (1935). Recent advances in Sugarcane Breeding in India. *Proc. Assn. Econ. Biol.*, Coimbatore, Vol. II.
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APPENDIX II.

Statement showing number of crosses effected, number of seedlings raised, etc., since the Thick Cane Breeding Section was established.

Year.	Total number of crosses.	Total number of seedlings raised.	Seedlings in the I Ground Nursery.	Seedlings in the II Ground Nursery.	Total number selected as 'Ps'.	Total number selected as 'Cos.'
1927-28	52	60,000	40,000	12,000	137	...
1928-29	74	100,000	40,000	19,000	231	...
1929-30	73	170,000	62,500	17,000	251	...
1930-31	57	250,000	80,000	17,000	248	8 (Co. 358 to Co. 365).
1931-32	55	180,000	55,000	14,450	275	16 (Co. 409 to Co. 415).
1932-33	25	100,000	55,000	15,000	215	5 (Co. 416 to Co. 420).
1933-34	30	250,000	70,000	14,000	155	11 (Co. 421 to Co. 431).
1934-35	109*	150,000	75,000	14,000	440	7 (Co. 432 to Co. 438).
1935-36	59	200,000	123,000	16,000	439	2 (Co. 439 and Co. 440).
1936-37	85*	200,000	120,000	14,500	..	6 (Co. 441 to Co. 445)

* Includes experimental crosses.

Total number of crosses made=619.

(2) Letter, dated the 31st October, 1937, from Rao Bahadur T. S. Venkatraman, C.I.E., I.A.S., Imperial Sugarcane Station, Coimbatore, Camp Delhi.

I am enclosing herewith a note on the "Scheme for accelerating the spread of improved canes in the country"

I have had my Director's permission to send this direct to you.

Enclosure.

SCHEME FOR ACCELERATING THE SPREAD OF IMPROVED CANES IN THE COUNTRY.

The scheme I have in mind is one similar to the field experimental service which has been found so successful in Java, the organization of whose sugar industry is an admitted model of efficiency.

Before describing the Java scheme, I shall mention certain important differences between the Javanese industry and our own, differences which render it difficult to copy in our country the Java scheme in its entirety. In Java there is almost an identity between the field and the mill as all cane in Java is grown by the factory. Secondly, the Experiment Station in Java is financed by the Industry which, besides ensuring a close relation between the Industry and the Experiment Station, tends to make the Station eager to please the Industry. Thirdly, the growing of canes in Java is in the hands of educated and sometimes even technically trained individuals. The conditions in India are well known to the Board.

When in the opinion of the Experiment Station, any new cane is considered promising and even before it takes a final decision about that cane, it is distributed for experimental growing and testing to the plantations scattered all over the island. Of course, these test plots have to be laid out in the proper manner and it is obligatory on the part of these plantations to submit the results to the Experiment Station under definite heads and such data include rough descriptions of the soil and details of field operations done in the plots. The standard printed form in which the results are sent to the Experiment Station, even lays down the period between which the harvesting of the plots has to be commenced and completed.

These data sheets are studied, results tabulated and a decision taken as to which canes have proved winners. In taking a decision about the superiority of P.O.J. 2878 in 1926-27 for instance, the Experiment Station had results before it from as many as 257 trials. By this scheme not only is the decision more reliable on account of the large number of tests, but a certain quantity of material of the selected cane becomes available in almost every factory plantation for further multiplication.

I shall illustrate, taking the so-called wonder cane of Java P.O.J. 2878, as an example. When its superiority was first really noticed in 1926 it was growing in about 200 test plots in the plantations. The canes proving promising in these test plots, their number quadrupled to 800 in 1927. By 1928 the number of such test plots under P.O.J. 2878 slightly fell down as by that time the superiority of the cane had been recognized and it had covered 60 per cent. of the total cane area. In 1929 the area under the cane rose to 90 per cent. of the total area. The rapidity of spread will be evident from the figures below.

1926—	4	} per cent. of the total sugarcane area.
1927—	124	
1928—	66	
1929—	93	

It needs also to be mentioned that the performance of the new canes on his own land and under his own conditions is a very efficient demonstration to the grower.

As already mentioned it is difficult at this stage to copy the Java scheme as a whole in India. At present real experimental testing of the Coimbatore productions is available only in the Sugarcane Testing Stations and these are a little over a dozen for the (at present) largest sugarcane area of the world. The need is therefore obvious for our testing stations to initiate in the plantations in their vicinity sugarcane varietal tests and other tests parallel with their own. It might be made a condition that such plantations should have suitable men for doing the tests and they should send their results to the Testing Stations.

Propaganda work to spread and explain the good points of the new canes has already been started in the sub-tropical provinces. Though the cane plantations are generally small and scattered there is a growing tendency to organize large estates particularly in Bombay and parts of the United Provinces. These should be warmly welcomed into the scheme of tests. In the case of the smaller grower even some kind of inducement might be offered to rope them in. It is worth it. Our Testing Stations should be anxious to develop such work as I feel that the full and proper testing of a new cane is incomplete without such extension plots in the cane area which the Testing Station is intended to serve.

(4) *Extracts from letter, dated the 31st October, 1937, from Rao Bahadur T. S. Venkatraman, C.I.E., I.A.S., Government Sugarcane Expert, Imperial Sugarcane Station, Camp Delhi.*

I cannot put up before you any scheme of expansion of my station except through the proper channels, viz., my Director and the Government of India. With the permission of my Director I am communicating semi-officially to you certain useful lines of expansion of my Station at Coimbatore by way of expanding on the sketchy references I made during the oral examination.

During my oral examination I mentioned that I would prefer a general recommendation from the Board for a sympathetic consideration of expansion schemes sent up from my Station. Such schemes have in the past had, generally, a sympathetic handling at the hands of both the Central Government and the Imperial Council of Agricultural Research. During the oral examination I felt that the Board was more desirous of suggestions about new lines rather than the augmentation of existing activities.

I have generally been averse to submit any scheme whose utility is not proven or at any rate highly promising from parallel work elsewhere. The newly started testing stations have been functioning only for some time now and through the kindness of both the Central Government and the Imperial Council of Agricultural Research two schemes are in progress. I indicate hereafter two directions in which expansion is likely to be useful:—

(i) *Physiological Studies.*—Physiological studies of the sugarcane plant, largely carried on in the field have been of great benefit to the work at the Station. I have often felt, however, that it would be a distinct advantage to have at the Station an officer acquainted with the latest methods in plant physiology. Among subjects that could be usefully studied in this line are (1) Root absorption in the sugarcane—the nature and factors affecting the intake of solutes; (2) Growth processes in the cane; (3) Preservation of pollen beyond the period already secured to cross-pollinate varieties flowering at widely different times; (4) Influencing time of flowering and fertility of flowers for hybridization; (5) Formation of fibre and pith; and (6) Physiology of drought and frost resistance. All these have a direct bearing on the work and are best located at the place where new canes are constantly produced, viz., Coimbatore.

The approximate average running cost is likely to be in the neighbourhood of Rs. 7,000 per year with an initial expenditure of Rs. 5,000 for apparatus, etc.

(ii) *Extension of area.*—During the oral examination I had mentioned the need for expansion of area devoted to the breeding of the thick class of canes. The starting of testing stations all over India naturally involves, if possible, the augmentation in the number of new canes to be sent out from Coimbatore to these testing stations so as to fully meet the widely varying conditions. This number is naturally dependent upon the area available at Coimbatore both in the nursery and the preliminary test plots. Secondly, recent extra activities at the Station such as the cyto-genetic work and the proposed physiological work would all need more area. The Sugarcane Geneticist is already taking about four acres. Extra land needed in this connection is expected to be about fifteen acres costing approximately Rs. 40,000 including the first lay-out.

(1) *Letter No. 182, dated the 15th May, 1937, from the Tariff Board to the Collectors of Customs, Calcutta, Bombay, Madras and Karachi.*

I am directed to invite a reference to the Government of India Department of Commerce, Resolution No. 127-T.(1)/37, dated the 27th March, 1937, and to say that in connection with the enquiry referred to the Tariff Board it will be helpful to the Board if will you kindly supply them with more detailed information than is available in the annual statement of the Seaborne Trade in British India published by the Department of Commercial Intelligence and Statistics on the following points:—

(a) Details of imports from different countries during the last seven years up to and including the year 1936-37 for

- (i) Sugar.
- (ii) Sugar candy.
- (iii) Confectionery with details, if possible, and
- (iv) Molasses.

(b) Imported price of the various articles mentioned in (a) above for the same period.

2. I am therefore to request you to be so good as to supply the necessary information with six spare copies as early as possible.

(2) *Letter, dated the 11th June, 1937, from the Collector of Customs, Calcutta.*

SUGAR—TARIFF BOARD ENQUIRY—DETAILS OF IMPORTS AND PRICES.

I have the honour to refer to your letter No. 182, dated the 15th May, 1937.

2. I enclose statements giving details of imports from different countries. The figures for sugar candy are given separately from 1933-34 up to October, 1935. Those for the remaining periods are included under the item "Sugar below 23 and above 16 D.S."

3. The c.i.f. prices for sugar candy and sugar from Hongkong from 1932 onwards are given in a separate statement. Prices before 1932 are not available.

4. Prices of sugar candy from China and Japan are not readily available.

5. As regards confectionery it is not possible to supply any figures as it comprises a wide range of varieties subject to changes in brand, quality and composition and there are no standard qualities.

6. As the statement for molasses will show, there have been no imports of this article during 1935-36 and 1936-37. No prices are available.

7. Price of Java sugar will follow.

8. Six spare copies of this letter and of the statements are enclosed.

Enclosure.

Statement showing the imports into Bengal of Sugar, viz., (1) Sugar 23 Dutch Standard and above, (2) Sugar, below 23 Dutch Standard but not below 16 Dutch Standard, (3) Beet Sugar, (4) Sugar 15 Dutch Standard and below, from different countries during the last seven years up to and including the year 1936-37.

Countries of consignment.	Sugar 23 Dutch Standard and above.			
	1930-31,		1931-32.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	950	1,46,938	92	27,915
Ceylon . . . . .	..	35	..	17
Hongkong	22	4,305	48	10,304
Germany . . . . .	..	..	..	..
Netherlands	10	975	40	4,193
Belgium . . . . .	..	15	..	..
France . . . . .	..	121	..	..
Czechoslovakia . . . . .	..	..	15	4,809
Java	260,763	2,87,99,696	122,820	1,34,48,961
China	632	1,20,617	465	84,875
Japan . . . . .	..	41	..	76
United States of America via Atlantic Coast.	..	..	..	..
Aden . . . . .	..	..	..	20
Straits Settlements . . . . .	..	..	12	2,484
Union of Socialist Soviet Republics.	..	..	14,585	13,85,621
Commonwealth of Australia . . . . .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total	262,377	2,90,72,743	138,077	1,49,60,275

Countries of consignment.	Sugar 23 Dutch Standard and above.			
	1932-33.		1933-34.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	651	1,95,007	1,866	2,37,422
Ceylon . . . . .	..	..	..	..
Hongkong	7	1,347	160	32,083
Germany	10	3,126	..	..
Netherlands	30	3,913	40	4,722
Belgium . . . . .	..	..	..	..
France . . . . .	..	..	..	..
Czechoslovakia	60	19,238	..	..
Java	85,600	1,06,71,677	22,977	23,76,791
China	509	1,02,187	416	62,294
Japan	102	19,797	11	2,724
United States of America <i>via</i> Atlantic Coast.	..	..	..	..
Aden . . . . .	..	..	..	..
Straits Settlements	12	2,481	10	2,183
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia . . . . .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total	86,981	1,10,18,773	25,480	27,18,219

Countries of consignment.	Sugar 23 Dutch Standard and above.			
	1934-35.		1935-36.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	295	55,207	114	37,383
Ceylon . . . . .	..	..	..	101
Hongkong	34	6,813	126	16,804
Germany . . . . .	..	..	..	57
Netherlands	10	3,200	..	30
Belgium . . . . .	..	..	..	..
France . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Java	19,639	21,04,033	16,700	15,98,515
China	699	1,09,504	399	66,071
Japan	34	4,387	28	3,837
United States of America <i>via</i> Atlantic Coast.	..	..	..	..
Aden . . . . .	..	..	..	..
Straits Settlements . . . .	..	..	12	1,567
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total .	20,711	22,83,144	17,379	17,24,165

Countries of consignment.	Sugar 23 Dutch Standard and above.		*Sugar below 23 Dutch Standard but not below 16 Dutch Standard.	
	1936-37.		1930-31.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	96	38,950	3	2,068
Ceylon . . . . .	..	25	..	..
Hongkong	72	10,096	..	..
Germany . . . . .	..	27	..	..
Netherlands . . . . .	..	..	..	40
Belgium . . . . .	..	14	..	..
France . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Java	3,662	3,35,395	64,244	67,34,251
China	626	94,259	195	44,286
Japan	2	584	..	..
United States of America <i>via</i> Atlantic Coast.	..	..	..	..
Aden . . . . .	..	..	..	..
Straits Settlements . . . .	..	..	..	..
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia .	..	51	..	..
Fiji Islands . . . . .	..	116	..	..
Total .	4,458	4,79,517	64,442	67,80,645

Includes figures for sugarcandy.

Countries of consignment.	*Sugar below 23 Dutch Standard but not below 16 Dutch Standard.			
	1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	2	1,573	1	1,021
Ceylon . . . . .	..	..	..	..
Hongkong	53	12,231	107	21,831
Germany . . . . .	..	..	..	..
Netherlands . . . . .	..	56	..	..
Belgium . . . . .	..	..	..	..
France . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Java	26,300	24,69,089	2	364
China	995	1,92,949	248	41,373
Japan . . . . .	..	..	1,110	1,87,360
United States of America <i>via</i> Atlantic Coast.	..	..	..	..
Aden . . . . .	..	..	..	..
Straits Settlements	3	914	34	7,820
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total	27,353	26,76,812	1,502	2,59,769

* Includes figures for sugarcandy.

Countries of consignment.	*Sugar below 23 Dutch Standard but not below 16 Dutch Standard.			
	1933-34.		1934-35.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom . . . . .	..	941	..	666
Ceylon . . . . .	..	..	..	..
Hongkong	247	34,868	366	48,349
Germany . . . . .	..	..	..	..
Netherlands . . . . .	..	..	..	..
Belgium . . . . .	..	..	..	..
France . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Java . . . . .	..	..	..	..
China	1,198	1,54,047	1,171	1,51,257
Japan	625	96,893	271	34,409
United States of America <i>via</i> Atlantic Coast.	..	..	..	..
Aden . . . . .	..	..	..	..
Straits Settlements . . . . .	..	..	38	4,926
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia . . . . .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total	2,070	2,86,749	1,846	2,39,607

* Includes figures for sugarcandy.

Countries of consignment.	*Sugar below 23 Dutch Standard but not below 16 Dutch Standard.			
	1935-36.		1936-37.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	1	701	..	700
Ceylon . . . . .	..	..	..	..
Hongkong	529	66,897	208	26,354
Germany . . . . .	..	..	..	..
Netherlands . . . . .	..	..	..	..
Belgium . . . . .	..	..	1	175
France . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Java . . . . .	..	..	..	..
China	518	74,732	1,280	1,59,005
Japan	946	1,22,635	364	41,230
United States of America <i>via</i> Atlantic Coast.	..	..	..	37
Aden . . . . .	..	..	..	..
Straits Settlements	12	2,530	..	..
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia . . . . .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total	2,006	2,67,495	1,853	2,28,527

* Includes figures for sugarcandy.

Countries of consignment.	Sugar 15 Dutch Standard and below.			
	1930-31.		1931-32.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	8	2,555	4	2,023
Ceylon . . . . .	..	..	..	..
Hongkong . . . . .	..	..	..	..
Germany	10	3,071	..	363
Netherlands . . . . .	..	350	..	..
Belgium . . . . .	..	..	9	4,258
France . . . . .	..	..	..	..
Czechoslovakia	11	2,546	3	594
Java	3,574	2,74,592	..	75
China . . . . .	..	..	..	15
Japan . . . . .	..	..	..	..
United States of America <i>via</i> Atlantic Coast.	119	28,124	169	40,842
Aden . . . . .	..	..	..	..
Straits Settlements . . . . .	..	..	..	..
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia . . . . .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total	3,722	3,11,238	185	48,170

Countries of consignment.	Sugar 15 Dutch Standard and below.			
	1932-33.		1933-34.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	1	782	..	265
Ceylon . . . . .	..	..	..	..
Hongkong . . . . .	..	..	..	..
Germany . . . . .	..	284	..	..
Netherlands	13	3,067	..	..
Belgium . . . . .	..	..	..	..
France . . . . .	..	..	..	..
Czechoslovakia	12	2,675	..	..
Java	12	3,179	..	..
China . . . . .	..	..	..	85
Japan . . . . .	..	..	..	..
United States of America <i>via</i> Atlantic Coast.	29	6,216	..	..
Aden . . . . .	..	..	..	..
Straits Settlements . .	..	..	..	..
Union of Socialist Soviet Republics.	..	..	..	..
Commonwealth of Australia .	..	..	..	..
Fiji Islands . . . . .	..	..	..	..
Total .	67	16,203	..	350

Countries of consignment.	Sugar 15 Dutch Standard and below.			
	1934-35.		1935-36.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	948	1	1,643
Ceylon
Hongkong
Germany
Netherlands
Belgium
France
Czechoslovakia
Java
China
Japan
United States of America <i>via</i> Atlantic Coast.
Aden
Straits Settlements
Union of Socialist Soviet Republics.
Commonwealth of Australia
Fiji Islands
Total	948	1	1,643

Countries of consignment.	Sugar 15 Dutch Standard and below.		Beet Sugar.	
	1936-37.		1930-31.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom	883	..	..
Ceylon
Hongkong
Germany
Netherlands	40	4,850
Belgium
France
Czechoslovakia
Java
China
Japan
United States of America <i>via</i> Atlantic Coast.
Aden
Straits Settlements
Union of Socialist Soviet Republics.
Commonwealth of Australia
Fiji Islands
Total .	..	883	40	4,850

Countries of consignment.	Beet Sugar.			
	1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom
Ceylon
Hongkong
Germany
Netherlands	30	3,675	20	2,450
Belgium
France
Czechoslovakia
Java	37
China
Japan
United States of America <i>via</i> Atlantic Coast.
Aden
Straits Settlements
Union of Socialist Soviet Republics.
Commonwealth of Australia
Fiji Islands
Total	30	3,675	20	2,487

Countries of consignment.	Beet Sugar.			
	1933-34.		1934-35.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom
Ceylon
Hongkong
Germany
Netherlands
Belgium
France
Czechoslovakia
Java
China
Japan
United States of America <i>via</i> Atlantic Coast.
Aden
Straits Settlements
Union of Socialist Soviet Republics.
Commonwealth of Australia
Fiji Islands
Total

Countries of consignment.	Beet Sugar.			
	1935-36.		1936-37.	
	Tons.	Rs.	Tons.	Rs.
United Kingdom
Ceylon	35
Hongkong
Germany
Netherlands
Belgium
France
Czechoslovakia
Java
China
Japan
United States of America <i>via</i> Atlantic Coast.
Aden
Straits Settlements
Union of Socialist Soviet Republics.
Commonwealth of Australia
Fiji Islands
Total	35

Dates	C.i.f. per cwt.						Remarks.
	April 1932	October 1932	1933	1934	May 1935	May 1936	March 1937
Hongkong Sugar— Half cubes 112× 1 lb. packet.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
	13 12 0	12 8 0	Not available	Not available	12 4 0	10 12 0	10 6 0
Fine grains 12× 10 lbs.	10 12 0	10 12 0	Do.	Do.	10 8 0	9 8 0	8 12 0
Dates	3rd April 1932	23rd March 1933	16th August 1933	4th Feb- ruary 1934	1935	1936	1937
	8 4 0	6 14 0	7 2 0	6 8 0	Not available	Not available	Not available
Hongkong, Medium, Crystal 2 maund bags.							

1932—Prices obtained from Messrs. Khaitan & Sons Company's Invoices.
1933 and 1934—Business was done by G. Atherton & Co. Prices not available from this firm.
Since 1935 agency is held by Messrs. Blackwood Bryson & Co., Ltd. The prices are obtained from the Invoices.

1932 to 1934 prices obtained from Messrs. Khaitan & Sons Company's Invoices.
No business from 1935.

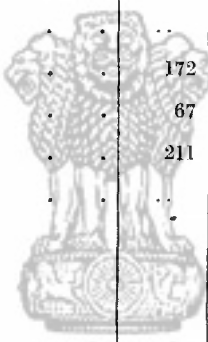
C.i.f. per cwt.

Dates	Hongkong Soft Sugar 2 Md. Bags	Dates	Hongkong Sugar candy $\frac{1}{2}$ pint
	Rs. a. p.		Rs. a. p.
25th June 1932 . . .	7 6 0	8th May 1932 . . .	8 4 0
31st March 1933 . . .	6 12 0	5th June 1932 . . .	9 0 0
19th August 1933 . . .	7 0 0	11th May 1933 . . .	6 0 0
6th January 1934 . . .	6 6 0	2nd September 1933 . . .	6 11 0
25th May 1934 . . .	6 4 0	19th January 1934 . . .	6 8 0
5th October 1934 . . .	6 2 0	25th May 1934 . . .	6 4 0
23rd November 1934 . . .	5 14 0	28th January 1935 . . .	6 4 0
19th January 1935 . . .	5 12 0	9th September 1935 . . .	7 2 0
29th August 1935 . . .	6 4 0	26th March 1936 . . .	6 2 0
26th February 1936 . . .	5 12 0	19th June 1936 . . .	6 0 0
11th April 1936 . . .	5 10 0	16th January 1937 . . .	6 2 0
24th August 1936 . . .	5 8 0	27th January 1937 . . .	6 14 0
26th October 1936 . . .	5 6 0		
27th January 1937 . . .	6 6 0		
Current price is stated to be Rs. 6.6 per cwt. C.i.f. (but no business booked).		Latest quotation Rs. 7 per cwt. C.i.f.	

NOTE.—These prices are obtained from Messrs. Khaitan & Sons Co.'s Invoices.

Statement showing the imports into Bengal of Confectionery from different countries during the last seven years up to and including the year 1936-37.

Countries of consignment.	1930-31.		1931-32.	
	Cwt.	Rs.	Cwt.	Rs.
United Kingdom	4,216	3,88,642	3,757	3,24,737
Ceylon . . . . .	..	19	..	..
Straits Settlements . . . . .	..	..	1	41
Canada via Atlantic Coast . . . . .	..	24	4	912
Hongkong	54	808	..	..
Commonwealth of Australia . . . . .	..	..	14	1,146
Germany	30	2,030	68	5,369
Netherlands	47	2,157	111	6,633
Belgium	419	19,514	832	41,778
France	4	543	135	6,824
Switzerland	1,185	67,885	561	34,613
Italy	49	5,532	45	5,906
Japan	195	9,334	167	7,280
Egypt	6	409	12	448
United States of America—				
<i>Via</i> Atlantic Coast	193	15,711	55	4,483
,, Pacific ,,	11	739	8	466
Austria . . . . .	..	..	..	..
Iraq . . . . .	..	..	..	..
Irish Free State . . . . .	..	..	..	..
New Zealand . . . . .	..	..	..	..
China . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Total	6,409	5,13,347	5,770	4,40,636

Countries of consignment.	1932-33.		1933-34.	
	Cwt.	Rs.	Cwt.	Rs.
United Kingdom	4,631	3,33,809	4,922	3,95,094
Ceylon . . . . .	..	..	..	..
Straits Settlements	17	557	30	816
Canada <i>via</i> Atlantic Coast	4	616	..	12
Hongkong	3	75	..	..
Commonwealth of Australia	20	738	1	48
Germany.	39	3,455	10	1,166
Netherlands	240	13,121	57	4,130
Belgium	431	20,830	535	24,697
France . . . . .	..	132	1	238
Switzerland	172	8,624	389	19,266
Italy	67	7,762	69	7,896
Japan	211	7,440	297	7,808
Egypt . . . . .	..	13	..	..
				
United States of America—				
<i>Via</i> Atlantic Coast	5	531	61	2,738
,, Pacific „ . . . . .	..	..	..	..
Austria . . . . .	..	..	1	756
Iraq . . . . .	..	..	..	..
Irish Free State] . . . . .	..	..	..	..
New Zealand . . . . .	..	..	..	..
China . . . . .	..	..	..	..
Czechoslovakia . . . . .	..	..	..	..
Total	5,840	3,97,703	6,373	4,64,625

Countries of consignment.	1934-35.		1935-36.		1936-37.	
	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
United Kingdom	4,663	3,62,259	5,637	4,51,748	6,119	4,91,760
Ceylon . . . . .	..	..	..	..	..	..
Straits Settlements . . .	..	..	..	..	..	..
Canada <i>via</i> Atlantic Coast .	2	128	..	..	1	13
Hongkong . . . . .	..	..	..	..	..	..
Commonwealth of Australia .	..	16	16	854	20	1,465
Germany	10	989	..	..	..	..
Netherlands	16	1,277	36	1,558	15	1,232
Belgium	452	16,489	435	29,062	307	22,934
France	4	902	..	38	10	1,094
Switzerland	30	1,402	9	892	19	2,013
Italy	43	4,682	51	5,636	3	335
Japan	1,740	51,569	475	16,843	399	14,695
Egypt . . . . .	..	..	..	..	..	..
United States of America—						
<i>Via</i> Atlantic Coast . . .	33	1,559	4	625	12	600
,, Pacific „ . . . .	..	..	10	725	2	61
Austria . . . . .	..	..	..	..	..	..
Iraq	1	70	1	54	..	..
Irish Free State . . . .	..	..	53	3,507	..	..
New Zealand . . . . .	..	..	..	34	44	2,009
China . . . . .	..	..	32	499	52	842
Czechoslovakia . . . .	..	..	..	..	6	555
Total	6,994	4,41,343	6,759	5,12,075	7,009	5,39,608

*Statement showing the imports of Sugar-Candy into Bengal from different countries during the three financial years from 1933-34 to October 1935.**

Countries of consignment.	1933-34.		1934-35.		1935-36.†	
	Ton.	Rs.	Ton.	Rs.	Ton.	Rs.
United Kingdom . . . . .	..	864	..	599	..	194
Hongkong	247	34,868	366	48,349	179	21,432
Java . . . . .	..	..	..	..	..	..
China	1,187	1,51,733	1,171	..	251	32,634
Japan	625	96,893	271	1,51,257	553	69,762
Straits Settlements . . . . .	..	..	38	34,409	12	2,530
Total	2,059	2,84,358	1,846	2,39,540	995	1,29,542

* As separate heads for sugar-candy was not maintained during other years, figures are not available for those years.

† This column represents figures during the period beginning from April 1935 to October 1935.

Statement showing the imports of Molasses into Bengal from different countries during the last seven years up to and including the year 1936-37.

Countries of consignment.	1930-31.		1931-32.		1932-33.		1933-34.		1934-35.		1935-36.		1936-37.	
	Ton.	Rs.	Ton.	Rs.	Ton.	Rs.	Ton.	Rs.	Ton.	Rs.	Ton.	Rs.	Ton.	Rs.
United Kingdom . . . . .	..	3	..	..	..	..	..	..	..	..	..	..	..	..
Java	95,410	38,29,420	37,839	14,51,669	29,580	9,39,643	2,380	66,705	415	8,281	..	..	..	..
United States of America via Pacific Coast.	..	..	..	19	..	..	..	..	..	..	..	..	..	..
Total	95,410	38,29,423	37,989	14,51,688	29,580	9,39,643	2,38	66,705	415	8,281	..	..	..	..

(3) *Letter, dated the 21st June, 1937, from the Collector of Customs, Calcutta.*

SUGAR—TARIFF BOARD ENQUIRY—DETAILS OF IMPORTS AND PRICES.

In continuation of my letter, dated the 11th June, 1937, I have the honour to enclose a statement of the prices of Java sugar obtained from Messrs. Ralli Bros. Ltd., Calcutta. The prices are inclusive of duty.



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LANDED CALCUTTA PRICES OF IMPORTED SUGAR—PER MAUND OF 82½ lbs.

		1930.			1931.
		White Javas.	Brown Javas.	British Refined.	White Javas.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	{ Lowest . .	8 3 0	7 15 3	8 11 9	8 2 9
	{ Highest . .	8 11 6	8 4 0	8 12 6	8 5 9
February	{ Lowest . .	8 0 0	7 15 0	..	8 6 0
	{ Highest . .	8 12 0	8 10 0	..	9 0 0
March	{ Lowest . .	8 9 3	8 8 3	..	8 12 0
	{ Highest . .	9 4 6	9 1 0	..	8 15 0
April	{ Lowest . .	9 1 0	8 10 6	..	8 14 6
	{ Highest . .	9 4 0	8 14 0	..	9 0 0
May	{ Lowest . .	8 14 3	8 9 0	..	8 15 9
	{ Highest . .	9 2 3	8 12 6	..	9 3 3
June	{ Lowest . .	8 12 9	8 4 6	..	9 3 3
	{ Highest . .	9 1 6	8 10 6	..	9 4 6
July	{ Lowest . .	8 9 9	7 14 9	..	9 3 9
	{ Highest . .	8 12 6	8 4 3	..	9 4 3
August	{ Lowest . .	8 11 0	7 15 3	..	9 1 3
	{ Highest . .	9 0 6	8 4 0	..	9 3 6
September	{ Lowest . .	8 10 3	7 14 9	..	9 0 0
	{ Highest . .	9 3 0	8 1 0	..	10 8 6
October	{ Lowest . .	8 5 3	7 11 6	..	10 8 0
	{ Highest . .	9 0 6	8 0 0	..	11 3 6
November	{ Lowest . .	8 1 9	7 9 6	..	10 13 0
	{ Highest . .	8 8 6	7 13 6	..	11 0 6
December	{ Lowest . .	8 2 0	7 10 0	..	10 13 6
	{ Highest . .	8 6 0	7 12 6	..	11 4 0

LANDED CALCUTTA PRICES OF IMPORTED SUGAR—PER MAUND OF 82½ lbs.—*contd.*

		1931.		1932.	1933.
		Brown Javas.	Russian X'tals.	White Javas.	White Javas.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	Lowest . .	7 8 6	..	10 15 0	10 5 9
	Highest . .	7 11 0	..	11 0 0	10 10 0
February	Lowest . .	7 9 6	..	10 14 3	10 5 3
	Highest . .	8 2 6	..	10 15 6	10 7 6
March	Lowest . .	8 1 6	..	10 10 0	10 5 0
	Highest . .	8 6 6	..	10 14 0	10 7 3
April	Lowest . .	8 5 3	..	10 8 9	10 2 6
	Highest . .	8 9 6	..	10 10 0	10 4 9
May	Lowest . .	8 5 3	8 14 0	10 8 9	10 3 0
	Highest . .	8 7 3	8 15 0	10 10 9	10 6 0
June	Lowest . .	8 6 9	9 0 0	10 8 9	10 6 0
	Highest . .	8 7 6	9 0 9	10 9 0	10 6 6
July	Lowest . .	8 6 9	8 13 6	10 7 0	10 6 6
	Highest . .	8 9 6	9 1 0	10 9 0	10 8 0
August	Lowest . .	8 9 0	8 11 6	10 7 9	10 8 0
	Highest . .	8 10 0	8 13 6	10 12 6	10 9 6
September	Lowest . .	8 9 9	8 9 6	10 9 0	10 8 0
	Highest . .	10 3 0	9 14 0	10 12 6	10 8 3
October	Lowest . .	10 3 0	9 14 0	10 10 3	10 7 9
	Highest . .	10 14 0	10 11 0	10 11 6	10 8 6
November	Lowest . .	10 11 6	..	10 10 3	10 6 6
	Highest . .	10 12 6	10 11 0	11 3 6	10 8 6
December	Lowest . .	10 14 0	..	10 11 0	9 15 0
	Highest . .	10 14 6	..	11 0 0	10 6 0

LANDED CALCUTTA PRICES OF IMPORTED SUGAR—PER MAUND OF 82½ lbs.—*contd.*

		1934.	1935.			
		White Javas.	White Javas.	Java Refined.		
				Type 1.	Type 2.	
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	
January	Lowest . . .	9 13 0	9 7 0	..	..
	Highest . . .	10 0 0	9 10 0	..	..
February	Lowest . . .	10 0 0	9 8 0	..	..
	Highest . . .	10 2 0	9 10 0	..	..
March	Lowest . . .	10 1 0	9 8 0	..	..
	Highest . . .	10 2 0	9 9 6	..	..
April	Lowest . . .	..	9 10 0	..	..
	Highest . . .	10 1 0	10 0 0	..	..
May	Lowest . . .	9 14 0	9 14 0	..	..
	Highest . . .	10 1 0	10 0 0	..	..
June	Lowest . . .	9 12 0	9 11 0	..	..
	Highest . . .	10 0 6	9 14 0	..	..
July	Lowest . . .	9 12 0	9 11 0	..	..
	Highest . . .	9 15 0	9 11 6	..	..
August	Lowest . . .	9 11 6	9 6 6	..	..
	Highest . . .	9 13 0	9 9 0	..	..
September	Lowest . . .	9 10 0	9 8 0	..	..
	Highest . . .	9 14 0	9 11 0	..	..
October	Lowest . . .	9 7 6	10 4 0	..	..
	Highest . . .	9 10 0	10 12 0	..	..
November	Lowest . . .	9 4 0	10 6 0	..	..
	Highest . . .	9 9 6	10 10 0	..	..
December	Lowest . . .	8 14 0	9 13 0	10 4 0	9 15 6	
	Highest . . .	9 6 0	10 0 0	10 2 6	10 2 6	

LANDED CALCUTTA PRICES OF IMPORTED SUGAR—PER MAUND OF 82½ lbs.—*concl'd.*

		White Javas.	Java Refined.		
			Type 1.	Type 2.	Type 3.
		Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
January	Lowest . .	9 12 0	10 2 6	10 0 6	..
	Highest . .	9 14 0	10 4 6	10 1 6	..
February	Lowest . .	9 14 0	10 4 5	10 1 6	..
	Highest . .	9 14 6	10 5 6	10 2 6	..
March	Lowest . .	9 14 0	10 2 0	..	..
	Highest . .	9 14 6	10 5 6	10 3 6	..
April	Lowest . .	9 13 6	..	..	..
	Highest . .	9 14 6	10 5 6	10 3 6	..
May	Lowest . .	9 14 0	..	10 2 6	..
	Highest . .	9 14 6	10 5 6	10 3 6	..
June	Lowest . .	9 13 6	..	..	..
	Highest . .	9 14 6	..	..	..
July	Lowest . .	9 13 6	..	..	..
	Highest . .	9 14 6	..	..	10 0 0
August	Lowest . .	..	..	..	..
	Highest . .	9 14 0	..	..	10 0 0
September	Lowest . .	..	..	..	..
	Highest . .	9 13 6	..	..	10 0 0
October	Lowest . .	..	..	..	..
	Highest . .	9 14 0	..	..	10 0 0
November	Lowest . .	9 11 0	..	..	9 15 0
	Highest . .	9 13 0	..	..	9 15 6
December	Lowest . .	9 9 0	..	..	..
	Highest . .	9 10 0	..	..	9 15 0

(4) Letter, dated $\frac{28th}{31st}$ May, 1937, from the Collector of Customs, Bombay.

SUGAR, SUGAR CANDY, ETC.—DETAILS OF IMPORTS DURING THE LAST SEVEN YEARS. YOUR LETTER NO. 182, DATED THE 15TH MAY, 1937.

I have the honour to refer to your letter cited above.

2. A statement with 6 spare copies giving the information so far as it is available from the records of this office is enclosed.

Enclosure.

Statement showing the quantities and value of (1) Sugar, (2) Sugar Candy, (3) Confectionery, and (4) Molasses imported into the Presidency of Bombay, excluding Sind, from foreign countries during each of the last seven Official Years from 1930-31 to 1936-37.

Article and country whence consigned.	1930-31.		1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
(1) SUGAR—						
(a) Sugar 23 Dutch Standard and above—Protected—						
United Kingdom .	49	20,123	54	20,604	51	18,446
Ceylon . . .	...	18	...	...	1	166
Straits Settlements .	3	983	9	3,300	2	553
Hongkong . . .	3,213	5,66,009	2,724	4,76,185	783	1,70,794
Union of South Africa.	...	...	...	76	...	46
Kenya Colony . .	...	...	...	35	...	...
Mauritius and Dependencies .	...	...	...	40	...	...
Commonwealth of Australia .	...	...	...	...	...	38
Union of Socialist Soviet Republic (Russia)—Southern . . .	...	...	...	...	...	45
Netherlands . .	...	...	...	1	...	...
Belgium . . .	18	3,833	10	1,998	11	2,247
France . . .	...	...	...	5	...	...
Italy . . .	...	...	...	...	...	22
Austria . . .	...	...	...	10	...	...
Carried over .						

NOTE.—Figures of imports of sugar candy are included under (1) (a) "Sugar 23 Dutch Standard and above".

Article and country whence consigned.	1930-31.		1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
Brought forward .						
(1) SUGAR— <i>contd.</i>						
(a) Sugar 23 Dutch Standard and above—Protected— <i>contd.</i>						
Czechoslovakia . . .	...	...	...	29	...	...
Other Native States in Arabia . . .	..	62	...	...	...	...
Iraq . . . . .	...	20	...	7	...	...
Persia . . . . .	...	16	...	1	...	...
Java	165,782	1,89,79,825	61,057	70,79,826	86,970	89,15,169
French Indo-China . . .	...	...	1	91	...	...
China (<i>exclusive of Hongkong and Macao</i>) . . .	58	13,790	21	5,231	15	4,210
Japan . . . . .	...	...	142	20,479	2,636	2,89,950
Portuguese East Africa . . .	...	...	...	10	12,652	12,73,325
Total	169,129	1,95,84,679	67,018	76,07,928	1,03,121	1,06,75,009
(b) Sugar below Dutch Standard but not below 16 Dutch Standard—Protected—						
United Kingdom	7	2,630	5	2,090	3	964
Java	11,192	11,97,807	3,005	2,99,054	...	...
United States of America <i>via</i> Atlantic Coast . . .	...	...	...	...	...	5
Total	11,199	12,00,437	3,010	3,01,144	3	969
(c) Best Sugar—Protected—						
United Kingdom	126	25,012	4,097	5,02,530	...	50
Straits Settlements . . .	...	4	...	...	...	...
Union of Socialist Soviet Republics (Russia)—Southern	26,312	28,08,138	47,150	44,26,205	5,251	5,29,893
Poland (<i>including Dantzig</i>) . . .	186	22,237	8,144	9,76,093	...	...
Carried over						

Article and country whence consigned.	1930-31.		1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
Brought forward .						
(1) SUGAR— <i>concd.</i>						
(r) Beet Sugar— <i>Protected—concd.</i>						
Germany . . .	5,367	7,57,729	450	53,310	249	26,968
Netherlands . .	571	77,201	407	58,527	439	46,362
Belgium . . .	...	...	...	...	2,368	2,39,725
France . . .	...	...	...	...	38	3,750
Hungary . . .	1,604	1,73,935	50	5,000	...	...
Czechoslovakia .	513	66,553	946	1,28,631	434	49,623
Yugo-Slavia (Kingdom of the Serbs, Croats and Slovenes) . . .	50	8,140	...	...	...	...
Portuguese East Africa . .	150	30,000	...	...	...	...
Total	34,879	39,68,949	61,214	61,50,296	8,779	8,98,371
(d) Sugar 15 Dutch Standard and below						
United Kingdom . . .	...	207	1	2,256	1	360
Kenya Colony . .	11	1,274	...	...	...	...
Tanganyika Territory . .	...	...	...	95	...	...
Germany . . .	7	5,132	12	8,185	...	...
Netherlands . .	...	...	76	16,827	...	...
Belgium . . .	18	3,763	31	7,347	...	...
France . . .	...	...	...	328	...	...
Austria . . .	18	4,271	...	...	...	...
Czechoslovakia .	20	4,785	201	48,033	...	...
Java . . .	11	1,229	8	722	...	...
Japan . . .	...	3	...	...	...	...
United States of America and Atlantic Coast . .	67	16,940	100	22,268	...	...
Total	152	37,604	429	1,06,041	1	360

Article and country whence consigned.	1930-31.		1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
(2) SUGAR CANDY	Figures are not separately available being included under "Sugar 23 Dutch Standard and above".					
(3) CONFECTIONERY—	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
United Kingdom	4,731	4,58,092	4,010	3,70,832	4,484	3,87,294
Gibraltar Palestine	...	30	...	...	...	...
Palestine	...	...	...	...	1	64
Aden and Dependencies	1	43	2	133	...	...
Ceylon	12	174	...	...	...	...
Straits Settlements	...	25	1	301	1	33
Hongkong	6	331	1	65	2	138
Union of South Africa	...	38	...	...	...	...
Zanzibar and Pemba	...	22	...	...	...	...
Kenya Colony	2	188	...	...	1	43
Tanganyika Territory	...	5	...	...	...	...
Seychelles	...	27	...	...	...	...
Canada via Atlantic Coast	7	1,087	...	20	...	...
Commonwealth of Australia	...	136	...	19	...	37
New Zealand including Nauru and British Samoa	...	13	...	...	...	...
Estonia	...	...	...	...	3	101
Sweden	...	...	...	6	...	...
Germany	95	7,799	94	10,027	58	3,913
Netherlands	595	31,761	692	35,991	231	14,661
Belgium	91	7,992	41	2,071	378	25,631
France	140	10,470	7	1,110	54	3,763
Switzerland	558	61,467	785	75,847	179	12,264
Italy	67	8,842	90	8,561	19	2,401
Carried over	...	...	...	...	...	...

Article and country whence consigned.	1930-31.		1931-32.		1932-33.	
	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
Brought forward .						
(3) CONFECTIONERY— <i>contd.</i>						
Austria . . .	19	2,034	6	737	1	146
Hungary . . .	5	587	...	...	...	...
Greece . . .	1	129	...	...	...	...
Czechoslovakia .	...	...	1	173	...	...
Syria . . .	...	...	...	28	...	...
Muskat Territory and Trucial Oman	...	...	1	50	...	...
Other Native States in Arabia . . .	...	5	...	...	1	29
Iraq . . .	7	409	1	146	1	80
Persia . . .	...	16	...	16	...	3
Java . . .	...	3	...	2	...	...
Japan . . .	356	17,661	396	22,206	534	18,684
Egypt . . .	100	5,190	8	381	...	...
Portuguese East Africa . . .	1	70	...	...	...	...
French Somaliland	...	4	...	...	...	...
United States of America <i>via</i> At- lantic Coast . .	24	2,305	47	5,461	4	753
United States of America <i>via</i> Paci- fic Coast . . .	12	1,979	28	2,690	...	...
Chile (<i>including</i> the Pacific Coast of Patagonia) . .	...	...	15	350	...	...
Total . . .	6,830	6,16,834	6,232	5,38,723	5,952	4,52,983
(4) MOLASSES—	Tons.		Tons.		Tons.	
Kenya Colony . .	...	4	...	1	...	...
Iraq . . .	1,173	68,980	...	...	...	...
Java . . .	...	...	287	15,117	...	...
TOTAL . . .	1,173	68,984	287	15,118	...	...

NOTE :— Confectionery with details not separately available.

Article and country whence consigned.	1933-34.		1934-35.		1935-36.		1936-37.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
(1) SUGAR—								
(a) Sugar 23 Dutch Standard and above—Protected—								
United Kingdom	75	20,710	67	23,482	60	22,093	64	23,923
Aden and Dependencies.	...	...	...	...	...	20	...	...
Ceylon	...	...	...	90	...	...	...	...
Straits Settlements.	...	17	...	...	...	...	...	...
Hongkong	501	53,773	629	68,014	742	1,11,345	2,168	2,43,391
Union of South Africa.	...	...	...	...	...	...	1	72
Zanzibar and Pemba.	...	...	...	...	1	140	...	...
Kenya Colony	...	...	...	...	...	...	...	15
Mauritius and Dependencies.	1	120	...	...	...	...	...	15
Canada via Atlantic Coast.	...	...	...	...	...	14	...	10
Commonwealth of Australia.	...	...	...	5	...	10	...	37
Sweden	...	...	...	1	...	15	...	..
Germany	...	...	...	39	...	10	...	5
Netherlands	...	...	90	7,200	...	...	...	...
Belgium	10	2,659	21	3,412	5	747	14	2,138
Iraq	...	...	...	...	...	20	2	197
Persia	...	...	...	...	...	13	...	...
Java	74,743	75,02,064	57,830	57,71,839	58,296	58,19,402	1,134	1,13,643
China (exclusive of Hongkong and Macão).	...	...	...	80	...	...	...	...
Japan	1,951	1,98,885	1,984	2,01,778	3,655	3,78,011	40	4,703
Egypt	...	...	25	2,500	...	...	...	...
Portuguese East Africa.	15,218	15,29,602	10,464	10,11,854	15,956	15,93,940	...	...
United States of America—Via Atlantic Coast.	...	52	...	2	...	3	...	...
Total	92,499	93,07,882	71,110	70,93,297	78,715	79,25,723	3,363	3,88,49

NOTE.—A special record of imports of Sugar Candy was maintained from February, 1933 to November, 1935 at the instance of the Director General of Commercial Intelligence and Statistics, Calcutta, and the figures of Sugar Candy for the years 1933-34 and 1934-35 are shown separately in the statement. These figures for the two years are not included under (1) (a) Sugar 23 Dutch Standard and above but for the remaining years they are included.

Article and country whence consigned.	1933-34.		1934-35.		1935-36.		1936-37.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
(1) SUGAR— <i>contd</i>								
(b) Sugar below 23 Dutch Standard but not below 16 Dutch Standard Protected—								
United Kingdom	...	67	...	...	...	...	...	...
Commonwealth of Australia.	...	...	...	1	...	...	...	...
Total	...	67	...	1	...	...	...	...
(c) Beet Sugar—								
United Kingdom	2,484	3,48,379	3,556	3,55,685	1,803	1,80,310	1	130
Commonwealth of Australia.	...	15	...	...	...	...	...	...
Union of Socialist Soviet Republics (Russia)—Southern.	...	...	...	...	...	...	300	30,050
Germany	50	6,000	117	11,815	...	...	...	...
Netherlands	1,270	1,35,645	1,686	1,69,662	1,835	1,90,075	1,649	1,76,33
Belgium	...	...	1,278	1,23,627	237	23,740	...	...
France	...	...	...	...	25	2,500	...	...
Poland (including Dantzig).	...	...	1,054	1,05,655	...	...	...	...
Czechoslovakia	...	...	78	7,87	...	...	...	...
Egypt	...	...	825	82,600	...	...	...	...
Portuguese East Africa.	...	...	624	62,600	...	...	...	...
Total	4,804	4,90,089	9,218	9,19,404	3,900	3,96,625	1,950	2,06,517
(d) Sugar 15 Dutch Standard and below—								
China (exclusive of Hongkong and Macão).	...	100	...	...	...	...	...	...
Other Countries	...	...	...	...	...	...	...	...
Total	...	100	...	...	...	...	...	...

Article and country whence consigned.	1933-34.		1934-35.		1935-36.		1936-37.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
(2) SUGAR CANDY—								
United Kingdom	...	...	...	69	...	...	...	...
Hongkong . .	428	82,773	370	69,523	The figures are not separately available being included under Sugar 23 Dutch Standard and above.			
China (exclusive of Hongkong and Macão).	10	1,671	8	450				
Japan . .	799	1,34,585	196	25,402				
Total	1,237	2,19,029	569	95,444				
	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
(3) CONFECTIONERY—								
United Kingdom .	5,468	4,61,573	6,613	5,03,996	8,102	6,01,807	8,449	5,86,959
Palestine . .	...	...	...	...	...	5	...	8
Aden and Dependencies.	...	8	...	27	...	...	...	...
Ceylon . .	...	...	...	...	...	7	7	236
Hongkong . .	3	219	...	6	...	10	1	51
Union of South Africa.	2	138	1	107	17	1,099	21	2,902
Zanzibar and Pemba	...	...	...	...	...	11	...	...
Kenya Colony .	...	88	...	24	1	46	...	...
Tanganyika Territory.	...	...	...	...	...	7	...	...
Commonwealth of Australia.	3	492	2	385	...	132	2	244
Estonia . .	4	266	...	...	...	...	...	...
Sweden . .	...	6	...	7	...	...	...	...
Norway . .	...	7	...	...	...	...	...	...
Denmark . .	...	...	...	10	...	10	...	21
Germany . .	3	252	102	8,382	33	4,407	77	4,370
Netherlands . .	190	11,493	40	2,552	16	1,230	103	4,366
Belgium . .	487	41,740	235	17,160	349	25,536	556	40,140
France . .	20	1,842	9	1,238	9	858	3	420
Carried over.								

Article and country whence consigned.	1933-34.		1934-35.		1935-36.		1936-37.	
	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
Brought forward .								
(3) CONFECTIONERY— contd.								
Spain . . . . .	...	1	...	...	...	...	...	...
Switzerland	159	15,263	29	3,011	34	3,931	19	2,103
Italy	65	8,060	21	2,808	36	5,065	19	2,509
Austria	3	537	19	2,279	10	1,243	16	1,710
Czechoslovakia . . .	5	217	7	399	...	...	12	1,022
Other Native States in Arabia.	...	...	...	...	1	39	...	...
Iraq	1	91	...	...	4	77	1	63
Persia	1	163	...	...	...	...	...	...
Philippines . . . .	...	...	...	10	...	...	...	...
China (exclusive of Hongkong and Macão.	...	3	...	58	...	6	...	...
Japan	1,234	37,616	1,362	42,504	3,124	91,880	3,566	1,33,306
Egypt . . . . .	...	84	...	11	...	10	...	...
United States of America—								
Via Atlantic Coast.	4	524	13	1,139	15	1,398	31	3,805
,, Pacific ,, . .	7	549	5	219	15	1,240	3	202
Total	7,659	5,81,197	8,458	5,86,332	11,766	7,40,054	12,886	7,83,930
(4) MOLASSES—	Tons.	Rs.	Tons	Rs.	Tons.	Rs.	Tons.	Rs.
United Kingdom . .	...	113	...	63	...	...	...	...
Ceylon . . . . .	...	...	...	14	...	...	...	...
Kenya Colony . . . .	...	...	...	...	...	...	...	1
Commonwealth of Australia.	...	...	...	...	...	7	...	24
Iraq . . . . .	...	4	...	1	...	8	...	5
Total . . . . .	...	117	...	78	...	15	...	30

**(5) STATEMENT SHOWING THE IMPORTS OF
SUGAR AND CONFECTIONERY INTO THE
PRESIDENCY OF MADRAS FROM FOREIGN
COUNTRIES FOR THE LAST SEVEN YEARS
UPTO AND INCLUDING THE YEAR 1936-37.**



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(5) Statement showing the Imports of Sugar and Confectionery into the
upto and including
As supplied by the Collector

Articles and countries of consignment.	1930-31.		1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
(a) Sugar 23 Dutch Standard and above.						
United Kingdom .	10	4,644	3,469	4,43,676	10,171	10,81,819
Ceylon	5,722	9,46,060	962	1,25,844	76	8,628
Straits Settlements .	10	2,294	4	807	2	645
Federated Malay States.	15	3,926	Lbs. 42	30	..	..
Germany . . .	197	22,002	..	..	Lbs. 2	4
Netherlands . .	..	..	..	..	..	..
Java	77,318	1,16,04,661	68,435	1,10,73,862	41,117	47,35,311
Borneo Dutch . .	9	1,421	Cwt. 8	64	..	..
Siam . . . .	..	..	..	..	..	..
China	3	581	8	1,338	22	4,192
Egypt . . . .	..	..	..	..	..	..
Japan	1	300	..	..	2	601
Hongkong . . .	..	..	3	457	3	409
Southern Russia .	..	..	5,113	6,68,553	2,333	2,64,872
Commonwealth of Australia.	..	..	..	..	..	..
Canada (Atlantic Coast).	..	..	..	..	..	..
TOTAL .	83,285	1,25,85,889	77,994	1,23,14,631	53,726	60,96,481
(b) Average imported price.	Per ton	151 1 0	Per ton	137 14 0	Per ton	113 7 0
(a) Sugar below 23 Dutch Standard but not below 16 Dutch Standard (Sugar Candy).						
Straits Settlements .	1	288	4	1,089	7	1,471
Ceylon . . . .	..	..	Cwt. 2	28	Lbs. 38	3
Japan . . . .	..	..	..	..	30	4,845
Java	85	14,340	15	1,283	..	..

*Presidency of Madras from Foreign Countries for the last seven years
the year 1936-37.*
of Customs, Madras.

1933-34.		1934-35.		1935-36.		1936-37.	
Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
9,982	10,47,787	369	38,836	2,662	2,32,360	18	7,333
5	519	2	396	102	11,660	Lbs. 18	1
4	861	1	586	Cwt. 24	195	Cwt. 7	47
..
Lbs. 19	22	Lb. 1	3	Lbs. 6	19	Lbs. 10	21
„ 13	253	..	..	..	..	..	..
43,856	45,61,200	47,547	41,31,596	36,459	30,89,945	591	54,133
1	96	..	..	..	..	..	..
..	..	Cwt. 2	20	..	..	..	..
13	2,848	17	3,729	17	4,876	27	6,208
..	..	1,700	1,44,471	..	..	..	..
1	142	10	1,737	9	1,596	2	409
..	..	1	78	Cwt. 5	51	..	..
..
Lbs. 24	10	..	..	..	..	..	..
„ 30	10	..	..	..	..	..	..
53,862	56,13,785	49,647	43,21,452	39,249	33,39,945	638	68,152
Per ton	104 3 0	Per ton	87 0 0	Per ton	85 1 0	Per ton .	106 13 0
Cwt. 9	77	Cwt. 25	296	Cwt. 12	104	Cwt. 10	82
..
17	2,643	137	19,281	64	8,535	130	17,734
Lbs. 56	5	..	..	..	..	..	..

Articles and countries of consignments.	1930-31.		1931-32.		1932-33.	
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
<i>(a) Sugar below 23 Dutch Standard but not below 16 Dutch Standard (Sugar Candy)—contd.</i>						
China	Cwt. 7	176	Cwt. 10	163	1	174
Belgium . . . .	..	..	..	..	3	529
Iraq . . . .	..	..	..	..	..	..
Netherlands . . . .	..	..	..	..	10	2,546
Germany . . . .	..	..	..	..	3	733
TOTAL	86	14,806	19	2,563	54	10,301
<i>(b) Average imported price.</i>	Per ton	172 2 0	Per ton	134 14 0	Per ton	190 12 0
<i>(a) Sugar 15 Dutch Standard and below.</i>						
United Kingdom . . . .	..	..	61	7,554	2	584
Ceylon	Lbs. 203	33	126	13,977	Lbs. 7	1
Straits Settlements	2	997	Lbs. 35	4	..	..
Germany	Lbs. 2	5	..	..	..	..
Java	231	23,939	1	203	..	..
China	6	1,698	..	..	..	..
TOTAL	239	26,672	188	21,738	2	585
<i>(b) Average imported price.</i>	Per ton	111 9 0	Per ton	115 10 0	Per ton	292 8 0
<i>(a) Molasses.</i>						
Straits Settlements	1	140	..	..	..	..
Java	4,685	3,16,489	919	64,510	1,831	1,01,467
Borneo Dutch	Cwt. 8	27	..	..	..	..
Ceylon . . . .	..	..	Lbs. 67	14	..	..
United States of America (Atlantic Coast). . . .	..	..	..	..	Cwt. 3	146
TOTAL	4,686	3,16,656	919	64,524	1,831	1,01,613
<i>(b) Average imported price.</i>	Per ton	67 9 0	Per ton	71 4 0	Per ton	55 7 0

1933-34.		1934-35.		1935-36.		1936-37.	
Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
2	613	1	480	1	159	5	707
3	537	..	..	..	..	..	..
..	..	Cwt. 1	12	..	..	..	..
..	..	8	1,428	..	..	..	..
..	..	Lbs. 4	7	..	..	..	..
22	3,875	146	21,504	65	8,798	135	18,523
Per ton	176 1 0	Per ton	147 4 0	Per ton	135 5 0	Per ton	137 3 0
..
Lbs. 84	6	..	..	..	..	..	..
..	..	..	..	Cwt. 8	32	..	..
..
..
..
Lbs. 84	6	..	..	Cwt. 8	32	..	..
Per ton	..	..	..	Per ton	80 0 0	..	..
..
..
..
..	..	..	..	Lbs. 66	5	Lbs. 11	2
Lbs. 12	6	..	..	..	..	..	..
Lbs. 12	6	..	..	Lbs. 66	5	Lbs. 11	2
..

Articles and countries of consignment.	1930-31.		1931-32.		1932-33.	
	Cwt.	Rs.	Cwt.	Rs.	Cwt.	Rs.
(a) Confectionery—United Kingdom	1,595	1,77,096	1,258	1,26,866	1,492	1,44,136
Ceylon	73	6,843	77	5,453	26	1,506
Straits Settlements	25	2,266	16	1,315	7	677
Other Native States in Arabia . . . . .	..	..	..	..	..	..
Federated Malay States	lbs. 10	5	lbs. 62	43	lbs. 8	5
Commonwealth of Australia . . . . .	..	..	..	..	..	..
Germany	5	438	12	1,368	5	802
Estonia . . . . .	..	..	..	..	..	..
Netherlands	62	3,387	115	5,333	46	2,806
Canada (Atlantic Coast). . . . .	..	..	..	..	..	..
Belgium	11	1,020	4	219	166	13,462
Union of South Africa . . . . .	..	..	..	..	..	..
France	203	14,907	94	6,769	257	14,393
Palestine . . . . .	..	..	..	..	..	..
Switzerland	107	14,280	124	15,475	17	1,739
Spain . . . . .	..	..	..	..	..	..
Italy	8	1,026	4	547	1	136
Indo-China	lbs. 3	5	..	..	..	..
Japan	97	5,395	43	2,686	129	8,287
China . . . . .	..	..	..	..	..	..
United States of America via Atlantic Coast	2	346	lbs. 15	30	1	128
Victoria	lbs. 7	7	„ 20	10	lbs. 48	35
Czechoslovakia . . . . .	..	..	..	..	..	..
New South Wales	lb. 1	1	..	..	..	..
Persia . . . . .	..	..	..	..	..	..
Denmark	lbs. 15	34	lbs. 15	30	lbs. 2	1
Sweden . . . . .	..	..	„ 3	1	..	..
Austria . . . . .	..	..	..	..	..	..
Natal . . . . .	..	..	..	..	lbs. 5	5
Total	2,188	2,27,056	1,747	1,66,145	2,147	1,88,118

(b) Average imported price (per cwt. Rs. 103-12) (per cwt. Rs. 95-1) (per cwt. Rs. 87-9)

1933-34.		1934-35.		1935-36.		1936-37.	
Cwt. 1,674	Rs. 1,46,946	Cwt. 1,777	Rs. 1,45,244	Cwt. 2,258	Rs. 1,88,887	Cwt. 2,833	Rs. 2,13,038
14	1,007	4	517	9	574	56	867
3	237	5	587	11	727	lbs. 40	26
..	..	5	780	..	..	..	..
..	..	lbs. 15	10	..	..	..	..
3	194	.. 8	15	lbs. 30	52	1	121
2	247	6	354	20	756	13	616
..	..	15	825	20	1,052	13	591
17	1,347	1	28	lbs. 6	6	..	..
lbs. 52	21	..	..	.. 28	14	..	..
223	19,131	27	1,822	195	14,460	161	12,508
lbs. 24	24	..	..	..	..	..	..
52	3,988	17	1,459	50	3,432	17	1,204
..	..	lbs. 50	14	..	..	..	..
17	1,485	11	1,054	10	959	10	890
..	..	..	3	..	..	..	..
4	488	lbs. 5	465	3	373	4	465
..	..	24	..	..	..	..	..
144	4,826	..	7,645	180	5,464	148	5,728
..	..	215	..	..	..	lbs. 8	4
lbs. 30	25	..	..	lbs. 30	26	.. 53	62
..
..	..	..	..	..	..	lbs. 28	61
..
..	..	..	11	..	..	..	..
lbs. 2	1	lbs. 35	..	..	..	..	..
..
..	..	..	..	..	..	lbs. 2	..
..	..	..	..	..	..	..	5
2,153	1,79,947	2,107	1,60,833	2,756	2,16,782	3,256	2,36,276

(per cwt. Rs. 83-9) (per cwt. Rs. 76-5) (per cwt. Rs. 78-10) (per cwt. Rs. 72-9).

(6) *Letter, dated the 1st June, 1937, from the Collector of Customs, Karachi.*

IMPORTS OF SUGAR, ETC. YOUR LETTER No. 182, DATED THE 15TH MAY, 1937.

With reference to your letter cited above, I have the honour to enclose a statement (with 6 spare copies) showing the imports of sugar and other articles into Karachi from foreign countries during the seven years ending 1936-37. I regret that figures of sugar candy prior to 1934-35 cannot be supplied as the relative ledgers, which are preserved for three years only, have been destroyed.

2. No useful information regarding the details of the articles other than that supplied, can be collected from the records of this office. A rough idea of the prices can be gathered from an average of the figures of quantity and value included in the statement; but such deduced prices cannot be regarded as identical with the actual prices at which the imports were made, because figures of quantity less than $\frac{1}{4}$ tons or cwt. are ignored and those equal to or more than $\frac{1}{4}$ ton or cwt. are taken as 1 ton or cwt., as the case may be, for purposes of the trade returns, on which the figures are based.





सत्यमेव जयते

Articles and country whence imported.	1930-31.		1931-32.		1932-33.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
SUGAR—						
23 Dutch Standard and above—						
United Kingdom .	50	21,845	47	18,755	55	20,540
Bahrein Islands .	..	..	..	..	..	100
Hongkong .	76	13,757	14	4,287	28	6,297
Straits Settlements	..	..	..	..	..	..
Norway .	..	..	..	..	..	..
Germany .	..	..	..	10	10	1,993
Belgium .	314	68,326	171	33,107	121	23,032
France .	..	103	..	..	..	..
Netherlands .	..	..	..	..	..	..
Czechoslovakia .	9	1,860	..	..	..	..
Java .	172,844	2,01,52,121	53,598	58,05,264	56,846	59,37,726
Iraq .	..	..	..	10	1	370
Muscat .	..	..	..	..	..	..
Other Native States in Arabia.	..	..	..	..	..	..
Iran .	..	25	..	..	..	..
China .	..	..	..	..	1	189
Japan .	..	..	..	..	150	23,747
Egypt .	..	..	..	..	..	..
Portuguese East Africa.	..	..	..	..	..	..
Morocco French Protectorate.	..	..	..	..	..	..
United States of America, <i>via</i> Atlantic Coast.	..	3	..	..	..	..
TOTAL	173,293	2,02,58,040	53,830	58,61,433	57,212	60,13,994

aure.

1933-34.		1934-35.		1935-36.		1936-37.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
57	20,825	75	26,741	78	28,405	72	27,104
..	5	..	2	..	..	..	..
24	5,242	31	6,937	28	6,898	36	7,467
..	..	..	..	4	1,051	..	..
..	88	..	..	..	1	..	..
..	101	34	5,781	..	52	..	19
1,857	2,93,507	78	12,961	20	3,411	15	2,647
..
..	..	..	..	..	10	..	..
..
33,908	33,48,757	34,141	28,10,769	23,736	20,39,983	6,566	5,29,174
..	..	..	..	..	18	..	..
..	2	..	6	..	6	..	..
..	..	..	..	..	3	..	..
..
..
117	16,823	9	1,539	3	750	..	..
..	..	..	8	..	..	..	..
2,967	2,94,704	..	..	..	..	..	..
..	..	..	12	..	..	..	..
..
38,930	39,80,054	34,368	28,64,756	23,869	20,80,588	6,689	5,66,411

Articles and Country whence imported.	1930-31.		1931-32.		1932-33.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
SUGAR—contd.						
Below 23 Dutch Standard but not below 16 Dutch Standard—						
United Kingdom .	10	4,274	3	2,140	..	431
Hongkong . . .	3	574	13	2,369	1	195
Java	11,452	12,54,745	1,259	1,16,716	1	54
Japan . . . . .	..	..	..	6	..	..
TOTAL .	11,465	12,59,593	1,275	1,21,231	2	680
BEST SUGAR—						
United Kingdom .	7,000	7,31,875	15,092	17,73,285	22,850	23,73,553
Union of Socialist Soviet Republics—						
Southern . . .	16,267	16,69,168	21,311	22,04,662	3,588	3,58,958
Poland	1,403	1,77,071	4,848	5,59,034	..	..
Germany	6,133	7,15,501	14,968	17,20,696	..	..
Belgium . . . .	..	..	..	..	..	..
France . . . . .	..	..	..	..	..	..
Austria . . . . .	..	..	400	47,499	..	..
Hungary	12,248	14,18,085	495	53,507	..	..
Ecuador . . . .	..	..	..	..	5,453	5,38,438
TOTAL .	43,051	47,11,700	57,114	63,58,683	31,891	32,70,949

1933-34.		1934-35.		1935-36.		1936-37.	
Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
6	3,247	5	2,385	1	1,179	..	838
..	29	..	..	..	..	..	..
..
..
6	3,276	5	2,385	1	1,179	..	838
21,068	21,07,715	12,397	10,62,721	18,700	15,82,458	..	..
..
..	..	3,446	2,84,268	..	..	..	..
..	..	..	..	976	79,331	..	..
..	..	695	54,163	..	..	..	..
..	..	1,055	83,506	..	..	..	..
..
1,684	1,63,733	..	..	..	..	..	..
..
22,752	22,71,448	17,593	14,84,658	19,676	16,61,789	..	..

Articles and country whence imported.	1930-31.		1931-32.		1932-33.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
<i>SUGAR—contd.</i>	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
15. Dutch Standard and below—						
United Kingdom .	..	411	1	998	..	1,533
Germany . . .	..	92	..	37	..	24
Netherlands . .	1	198	..	..	..	..
Czechoslovakia .	..	..	3	825	..	..
Italy . . . . .	..	..	1	324	..	..
Java	3,623	3,05,459	..	2	..	..
United States of America <i>via</i> Atlantic Coast.	12	3,182	2	501	..	..
TOTAL .	3,636	3,09,342	7	2,687	..	1,557
<i>SUGAR CANDY—</i>						
United Kingdom .	}	*	*	*	*	*
Hongkong . . .		*	*	*	*	*
Japan		*	*	*	*	*
TOTAL .		*	*	*	*	*
<i>CONFECTIONERY—</i>	Cwt.		Cwt.		Cwt.	
United Kingdom .	3,550	3,57,519	3,343	3,35,037	3,086	2,76,137
Gibraltar . . .	..	..	..	..	..	..
Malta . . . . .	..	..	..	..	..	..
Bahrein	8	278	3	104	1	91
Aden . . . . .	..	..	..	..	..	..
Palestine . . .	..	..	..	2	..	..
Ceylon . . . . .	..	..	..	..	..	..
Straits Settlements	..	25	..	..	..	..
Canada <i>via</i> Atlantic Coast.	..	..	..	..	..	..
Zanzibar . . .	..	10	..	..	..	..
Esthonia . . . .	..	..	..	..	..	..
Germany	27	2,899	2	240	4	536
Netherlands . .	489	36,027	458	31,104	310	18,247

* Not available owing to the destruction of records previous to 1934-35. They are included under "Sugar, 23 Dutch Standard and above."

Articles and country whence imported.	1930-31.		1931-32.		1932-33.	
	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
CONFECTIONERY—	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
<i>contd.</i>						
Belgium . . .	20	1,409	20	1,537	20	2,276
France . . .	14	1,122	9	582	32	4,412
Italy . . .	25	2,837	32	3,817	25	2,738
Spain . . .	..	..	..	..	..	..
Austria . . .	..	..	..	..	..	..
Hungary . . .	..	..	..	..	..	..
Switzerland . .	60	6,934	105	13,050	9	1,312
Syria . . .	..	..	..	..	..	..
Iraq . . .	7	397	2	213	3	264
Muscat. . .	3	237	1	115	4	154
Iran . . .	1	185	..	89	1	136
Other Native States in Arabia.	..	24	2	53	..	..
Henjam Islands .	..	..	..	7	..	4
Java . . .	..	..	..	..	..	..
Philippine Islands .	..	..	..	..	..	..
Japan . . .	9	1,067	..	17	16	1,244
Canary Islands .	..	..	..	..	..	..
Algeria . . .	..	..	..	..	..	..
Egypt . . .	9	560	21	857	..	5
United States of America—						
<i>Via</i> Atlantic Coast.	6	663	..	45	..	25
<i>Via</i> Pacific Coast	..	14	..	..	..	..
TOTAL .	4,228	4,12,207	3,998	3,86,869	3,520	3,07,581
MOLASSES—						
United Kingdom .	..	..	..	..	..	..
Hongkong . . .	..	..	..	..	..	..
Java . . .	157	8,444	857	35,231	398	14,057
TOTAL .	157	8,444	857	35,231	398	14,057

1933-34.		1934-35.		1935-36.		1936-37.	
Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.	Quan- tity.	Value.
Tons.	Rs.	Tons.	Rs.	Tons.	Rs.	Tons.	Rs.
78	6,329	34	2,357	91	5,563	576	16,683
..	..	..	94	..	88	5	720
22	2,513	14	1,753	9	1,019	2	324
..	1	..	..	..	..	..	..
..	..	..	..	..	16	2	205
..	..	..	..	..	23	..	..
5	607	5	652	7	1,005	2	305
..	..	..	17	..	..	..	15
3	246	4	120	5	250	..	..
10	339	13	374	11	291	..	..
2	174	3	134	..	69	..	..
..	16	1	30	..	19	..	..
..	2	..	6	..	3	..	..
6	247	..	..	..	..	..	..
..	4	..	..	..	..	..	..
45	2,598	194	13,192	246	11,014	129	6,228
..	4	..	..	..	..	..	..
..	..	..	2	..	..	..	..
..	35	..	33	..	14	1	203
1	179	15	530	..	25	..	..
..
4,069	3,48,973	4,465	3,66,779	5,660	4,14,226	6,826	4,41,295
..	..	..	..	..	12	..	..
..	41	..	..	..	..	..	..
..	..	..	..	..	1	..	..
..	41	..	..	..	13	..	..

(7) *Letters, dated the 23rd June, 1937, from the Tariff Board, to the Collectors of Customs, Bombay/Calcutta.*

I am directed to refer to your letter, dated the 28th/31st May, 1937 to 11th June, 1937 and to say that the Board find from the statement supplied by you giving the details of imports of sugar, sugar-candy, confectionery and molasses during the last seven years that considerable quantities of various qualities of sugar and sugarcandy have been imported from Hongkong. I am to enquire whether it will be possible for you to let the Board know the country of origin of these products which have been coming to India from Hongkong now for some years. As far as is known, Hongkong is not a sugar producing area.

(8) *Letter, dated the 8th/9th July, 1937, from the Collector of Customs, Bombay.*

SUGAR, SUGAR-CANDY, ETC.—DETAILS OF IMPORTS DURING THE LAST SEVEN YEARS—YOUR LETTER, DATED 23RD JUNE, 1937.

I have the honour to refer to your letter cited above.

2. Statistics are recorded in this office according to countries of consignment and not according to countries of origin. It is not therefore possible to supply the countries of origin of the products in question.

3. Though Hongkong is not a sugar producing country, there are factories in Hongkong which manufacture refined soft sugar and sugar-candy from raw sugar mostly imported from Java. There were, no imports of molasses from Hongkong during the last seven years while those of confectionery were practically negligible.

(9) *Letter, dated the 9th July, 1937, from the Collector of Customs, Calcutta.*

I have the honour to refer to your letter, dated the 23rd June, 1937.

2. The Taikoo Sugar Refining Factory at Hongkong is the largest factory of its kind in the world. Enquiries show that the raw products utilised there is obtained from Java. The refined sugar is known in the trade as Hongkong sugar. Sugar-candy is also produced in the course of refinement of the Java raw product.

(10) *Letter, dated the 5th August, 1937, from the Collector of Customs, Bombay.*

SUGAR, SUGAR-CANDY, GLUCOSE, ETC.—FIGURES OF IMPORTS—CLASSIFICATION, TARIFF AND STATISTICAL.

I have the honour to refer to the evidence which I gave before the Tariff Board on 2nd August, 1937 and to furnish the further information, called for on the subject cited above:—

- (1) Figures of imports of "cube sugar" and "sugar-candy" for the year 1936-37 and the first quarter of the current year are not available, as statistics are not separately recorded.
- (2) Two samples of "beet sugar" are forwarded herewith. No other varieties of sugar besides cane and beet sugar are imported at this port.
- (3) All descriptions of "glucose" refined (in liquid or in powder form) and unrefined are classified for statistical purposes under the head "Chemicals, etc.—Other sorts of chemicals". Figures of imports of glucose imported other than as medicines are not available, as they are not separately recorded. Glucose is assessed under item 87 of the Tariff when imported otherwise than as medicines.

(11) *Letter, dated the 4th August, 1937, from the Collector of Customs, Bombay.*

CLASSIFICATION OF SUGAR-CANDY IN THE SEA-BORNE TRADE RETURNS.

In connection with the evidence I gave before the Tariff Board on the 2nd instant I forward herewith for its information a copy of my letter S. No. 11-57/37-S, dated the 31st July, 1937 to the Director General of Commercial Intelligence and Statistics, Calcutta, on the above subject.

Copy of letter No. 11-57/37-S, dated the 31st July, 1937, from the Collector of Customs, Bombay to the Director General of Commercial Intelligence and Statistics.

CLASSIFICATION OF SUGAR-CANDY IN THE SEA-BORNE TRADE RETURNS.—YOUR LETTER No. 10172-Q, DATED THE 5TH JULY, 1937.

I have the honour to refer to the letter, dated above.

2. Sugar-candy imported at this port is generally of 23 Dutch Standard and above and is being classified under the sub-head "Sugar, 23 Dutch Standard and above" in the absence of any head for non-protected sugar.

3. Since, however, sugar is subject to "Protective duty" and sugar-candy pays only a "Revenue duty" I suggest that sugar-candy should be specified as a separate sub-head under the major head "Sugar"—item No. 91 of List No. 1—Imports—from foreign countries.

4. There has been no mis-classification under any other heads which are distinguished as "protected" and/or "not protected".

(12) *Letter, dated the 8th July, 1937, from the Collector of Customs, Madras.*

I have the honour to forward, as desired by the Board, a statement showing the imports of sugar-candy during 1934-35, 1935-36, 1936-37 and from April to June, 1937. * * * * *

2. The practice followed here of classifying sugar-candy as being of 16 Dutch Standard and above is based on the classification of the article in the Alphabetical index of commodities which enter into the Foreign Sea-borne Trade of British India compiled by the Department of Commercial Intelligence and Statistics (Publication No. 1942, Government of India, Central Publication, Calcutta). In this connection I enclose for your information an extract of para. 1 of letter No. C. 1279/37, dated the 17th June, 1937, from the Collector of Customs, Karachi, to the Director General of Commercial Intelligence and Statistics, Calcutta, a copy of which has been forwarded here for consideration.

3. I regret that the information given by me in my oral evidence yesterday in regard to treacle is not correct. I find that on the basis of the classification in the Alphabetical Index referred to in para. 2 above, unrefined treacle imported in bulk is assessable as "molasses" while refined treacle in bottles or tins is assessable as provisions. In either case, it is not assessed as "confectionery". Unrefined treacle in bulk is not imported into this Presidency and importations by the trade of refined treacle in tins or bottles are inconsiderable.

Enclosure.

EXTRACT OF PARA. 1 OF LETTER No. C. 1279/37, DATED THE 17TH JUNE, 1937, FROM THE COLLECTOR OF CUSTOMS, KARACHI, TO THE DIRECTOR GENERAL OF COMMERCIAL INTELLIGENCE AND STATISTICS, CALCUTTA.

Sugar-candy—Classification of.

I have the honour to state that sugar-candy has hitherto been classified for statistical purposes at this port as "Sugar 23 Dutch Standard and

above"; the correct classification, however, appears ordinarily to be "Sugar, below 23 Dutch Standard but not below 16 Dutch Standard"; this is being brought into effect immediately.

(True extract).

Statement of sugar-candy imported into the Madras Presidency during 1934-35, 1935-36, 1936-37 and April-June, 1937.

Year.	Country whence consigned.	Quantity.				Value.
		Tons.	cwts.	qrs.	lbs.	Rs.
1934-35	Netherlands . . .	8	0	0	0	1,428
	Japan	136	13	0	0	19,281
	Straits	1	9	3	10	296
	China	1	17	1	0	415
	Iraq	0	1	0	0	12
1935-36	Japan	63	15	0	0	8,535
	Straits	0	12	1	0	104
	China	1	0	1	0	169
1936-37	Japan	130	12	2	0	17,734
	Straits	0	10	1	17	82
	China	5	3	0	24	707
April to June 1937.	Japan	31	17	2	0	4,173
	China	0	3	0	24	30

(13) Letter, dated the 8th July, 1937, from the Tariff Board, to the Collector of Customs, Madras.

In the course of informal discussion with the Tariff Board at Madras, on the 7th July, 1937, you promised to supply—

- (1) figures for the import of sugar-candy;
- (2) Details as to how the figures for the price of imported sugar have been arrived at, and
- (3) particular instances of imports during 1936-37, with details showing how the imported prices have been calculated.

I am directed to request that while supplying these figures you may kindly also supply the following information if available—

- (i) The duty on glucose;
- (ii) The imports of glucose for the last seven years, and
- (iii) The countries of origin.

(14) Letter, dated the 10th July, 1937, from the Collector of Customs, Madras.

SUGAR ENQUIRY.

I have the honour to refer to your letter, dated the 8th July, 1937.

2. Information regarding items (1) and (3) of paragraph 1 of your letter has been furnished in my letter, dated the 8th July, 1937.

3. As regards item (2) of paragraph 1 of your letter, the values shown in the statement sent by me were based on the values declared in the Bills of Entry for the various grades of sugar imported into this Presidency. The values comprise the c.i.f. prices shown in invoices and the landing charges at the rate of Rs. 5 per ton. The high incidence in value for sugar below 23 Dutch Standard but not below 16 Dutch Standard is due to the inclusion of sugar-candy under this category.

4. Glucose which is specially prepared for medicinal purposes is assessed at 30 per cent. *ad valorem* (standard rate) and 20 per cent. *ad valorem* (preferential rate, if imported from the United Kingdom or a British colony) under item 28 of the Indian Customs tariff. Glucose for other purposes is assessed at 25 per cent. *ad valorem* under item 87 of the Indian Customs Tariff, irrespective of the country from which it is imported.

5. I regret I am unable to furnish figures for imports of glucose for the last seven years as the article is not recorded separately in the trade statistics.

6. Glucose is chiefly imported from the United States of America; while Great Britain and the Continent also send small quantities of the refined product.

Replies received from the Director General of Commercial Intelligence and Statistics.

(1) Letter, dated the 27th April, 1937, from the Director General of Commercial Intelligence and Statistics, Calcutta.

RETAIL PRICES OF SUGAR.

With reference to Sir Geoffrey Bracken's recent conversation with Dr. Matthai on the above subject, I enclose three statements showing the quarterly retail prices of sugar in India (Calcutta), Great Britain and North Ireland, the United States of America, France and Japan for the last five years as far as data are available in this Department. Three Charts have also been drawn to illustrate the movement of these prices and are sent herewith. The qualities for which the quotations have been furnished are specified as far as available, but it is not known whether they refer to grades mostly consumed in the respective countries.

Enclosure.

TABLE 1.—Prices of Crystal Sugar per seer in the College Street Market, Calcutta.

	1932.	1933.	1934.	1935.	1936.
	a. p.	a. p.	a. p.	a. p.	a. p.
Beginning of—					
February .	4 6	4 9	4 6	4 0	4 6
to				to	to
May .	5 0			4 6	5 0
to				to	to
August .	4 9	4 9	4 0	4 0	4 6
to			to	to	to
November .	5 0		4 6	4 9	
to			to	to	to
	4 6	4 6	4 0	4 6	4 6
	to		to	to	
	5 0		4 6	5 0	

Source:—"The Calcutta Municipal Gazette."

TABLE 2.—Average retail price of Sugar (Granulated) per lb. in Great Britain and North Ireland at the beginning of February, May, August and November, during 1932-1936.

	1932.	1933.	1934.	1935.	1936.
	s. d.	d.	d.	d.	d.
February . . .	*	2½	2½	2½	2½
May . . .	*	2½	2½	2½	2½
August . . .	*	2½	2½	2½	2½
November . . .	*	2½	2½	2½	2½†

TABLE 3.—Average retail price of Sugar in 51 large Cities in the United States of America, at the middle of the months of February, May, August and November, during 1932-1936.

	1932.	1933.	1934.	1935.	1936.
	Cents per lb.	Cents per lb.	Cents per lb.	Cents per lb.	Cents per lb.
February . . .	5.4	5.0	5.6	5.4	5.6
May . . .	4.9	5.3	5.4	5.7	5.6
August . . .	5.1	5.6	5.7	5.8	†
November . . .	5.1	5.6	5.6	5.9	†

Source:—Table 2.—United Kingdom Ministry of Labour Gazette.

Table 3.—Monthly Labour Review of the United States of America, Department of Labour, Bureau of Labour Statistics.

RETAIL PRICES OF SUGAR.

TABLE 4.—Average retail selling price (in Francs per kilogram) of sugar in the headquarters of provinces and town of over 10,000 inhabitants (except Paris) in France.

	1931.	1932.	1933.	1934.	1935.	1936.
February . . .	3.83	4.01	3.96	4.03	3.73	§
May . . .	3.92	4.01	4.02	4.02	3.68	§
August . . .	4.14	4.09	4.06	4.00	3.55	§
November . . .	4.01	4.01	4.00	3.84	3.47	§

TABLE 5 (i).—Retail prices of Refined Sugar in the City of Yokohama in Yen per kin.

	1931.	1932.	1933.	1934.	1935.	1936.
Monthly averages—						
February . . .	.220	.200	.240	.220	.240	§
May . . .	.210	.190	.240	.220	.230	§
August . . .	.200	.230	.230	.230	.230	§
November . . .	.200	.250	.220	.240	.250	§

* Not available in this Department.

† Relates to 31st October, 1936.

‡ Not yet available.

§ Figures for 1936 not yet available.

TABLE 5 (ii).—Retail prices of Centrifugal Sugar in the City of Yokohama in Yen per kin.

Monthly averages—

	1931.	1932.	1933.	1934.	1935.
February . . .	·170	·170	·200	·190	·200
May . . .	·160	·170	·200	·190	·190
August . . .	·160	·180	·200	·190	·180
November . . .	·160	·200	·190	·190	·210

Source:—Table 4.—Annuaire Statistique 1935, Volume.

Tables 5 (i) and (ii).—Annual report of the Yokohama Chamber of Commerce and Industry.

(2) Letter, dated the 25th September, 1937, from the Director-General of Commercial Intelligence and Statistics, Calcutta.

RETAIL PRICES OF SUGAR.

In continuation of my letter, dated the 27th April, last, I enclose a statement containing later data on the subject, as far as available at present.

Enclosure.

TABLE 1.—Prices of Crystal Sugar per seer in the College Street Market, Calcutta.

Beginning of—	1937.
	As. P.
February . . .	4 6
May . . .	4 6
August . . .	5 0
November . . .	...

TABLE 2.—Average retail price of sugar (Granulated) per lb. in Great Britain and Northern Ireland at the beginning of February, May, August and November, 1937.

Beginning of—	1937.
	d.
February . . .	2½
May . . .	2½
August . . .	2½*
November . . .	...

* Relates to 31st July.

TABLE 3.—Average retail price of sugar in 51 large cities in the United States of America at the middle of the months of February, May, August and November, 1936, 1937.

	Cents per lb.	Cents per lb.
	1936.	1937.
February	5 6	Not yet received.
May	5 6	
August	5 7	
November	5 5	

TABLE 4.—Average retail selling price of Sugar in the headquarters of Provinces and towns of over 10,000 inhabitants (except Paris) in France.

(In francs per Kilogram.)

	1936.	1937.
February		Not yet received.
May		
August		
November		

TABLE 5 (i).—Retail prices of Refined Sugar in the City of Yokohama in Yen per kin.

	1936.	1937.
February	·240	·250
May	·230	·260
August	·240	*
November	·230	*

TABLE 5 (ii).—Retail prices of Centrifugal Sugar in the City of Yokohama in Yen per kin.

	1936.	1937.
February	·200	·210
May	·210	·230
August	·190	*
November	·200	*

- (3) Letter, dated the 24th June, 1937, from the Director, Imperial Institute of Sugar Technology, Cawnpore, to the Director General of Commercial Intelligence and Statistics, Calcutta, forwarded by the Director General of Commercial Intelligence and Statistics, Calcutta.

With reference to your letter No. 8294, dated the 3rd June, 1937, I have the pleasure to state that information regarding the present position of the Sugar Industry in Java is available in the "Review of the Sugar Industry of India", 1935-36. Information regarding the position of the Industry in Japan is not available in this office. About the cost of production we have the following information available with us:—

* Not yet received.

JAVA.

Cost of production in Java in 1935 was calculated at 3.75 to 4.50 florins per 100 kilos (excluding the cost of amortisation). Inland retail price may be taken at 8.50 cents per kilos.

Export.—The latest export sales of the Nivas were made at the following prices—

	Superior.	Brown sugar.
	(Florins per 100 kilos).	
Singapore	6.35—6.45	6.30—6.35
Penang	6.30—6.35	6.20—6.25
Hongkong	6.05—6.10	...
China	5.95—6.00	5.80—5.85
Aden	5.70	...
West of Suez	4.95	...
India—West Coast	6.95	...
East Coast	7	...
Bangkok	5.42½—5.47½	...
Netherlands	4.75	...
Port Said	4.75	...

Present currency exchange is 8.94 florins=£1 sterling.

Source:—Zeischrift Fur Die Zucherindustrie der Cechoslowakischen Republik No. 14 of 1935.

JAPAN.

Cost of production.—Average production cost *per picul* (60 kilos) of sugar produced in modern Formosan sugar mills during the crop year 1932-33, amounted to Yen 7.06. Inland retail price was 0.34 Yen per kilos.

Present Exchange Rate.—17 Yen=1 pound sterling. I trust you will find the information useful.

(4) *Letter, dated the 3rd July, 1937, from the Director General of Commercial Intelligence and Statistics, Calcutta.*

INFORMATION REGARDING AREA AND YIELD, IMPORTS AND EXPORTS, AND PRICES
OF SUGAR IN SIAM.

I have the honour to enclose a statement showing the quantity and value of sugar imported into and exported from Siam, during the seven official years ending 1935-36. I regret that statistics of acreage under cane and production of sugar in Siam are not available in this Department. Information relating to current prices of sugar in that country is not also available.

Statement showing the quantity and value of sugar and molasses imported into and exported from Siam, during the seven official years ending 31st March, 1936

(Compiled from the "Annual Statement of the Foreign Trade and Navigation of the Kingdom of Siam".)

Years.	Imports into Siam from all countries.				Exports from Siam to all countries.	
	Manufactured sugar.		Molasses.		Sugar.	
	Quantity Kilogrammes.	Value Baht.	Quantity Kilogrammes.	Value Baht.	Quantity Piculs.	Value Baht.
1929-30	44,857,593	7,183,100	11,904,951	531,302	592	3,648
1930-31	51,902,819	6,274,043	8,812,572	524,215	32	174
1931-32	39,112,658	4,611,148	10,405,583	280,287	149	830
1932-33	39,860,172	5,208,976	6,993,741	183,703	185	1,348
1933-34	36,264,566	4,626,420	4,188,045	105,170	2,484	10,009
1934-35	38,245,020	3,860,238	6,527,378	190,163	1,194	4,507
1935-36	43,454,932	3,549,441	12,944,742	659,571	179	880

(Picul=60 Kilogrammes.)

(5) *Letter, dated the 22nd September, 1937, from the Director General of Commercial Intelligence and Statistics, Calcutta.*

As desired, I place below two statements showing—

- (i) the estimated quantity of imported sugar retained for consumption in British India, excluding Burma; and
- (ii) estimated imports of sugar-candy during the past three years and in the first quarter of 1937-38.

2. As regards the disparity in the prices of Java sugar at Calcutta and Bombay, as published in the "Indian Trade Journal", it may be stated that these prices have been taken from the "Calcutta Prices Current" issued by the Bengal Chamber of Commerce and the weekly "Current Quotations" issued by the Bombay Chamber of Commerce. An enquiry is being made of the Bengal Chamber of Commerce as to whether the prices of Java sugar at Soerabaya are regularly published in the "Indian Trade Journal". These are furnished by the Director, Imperial Institute of Sugar Technology.

Enclosure.

STATEMENT I.—Showing the quantity of imported sugar retained for consumption in British India.

Years.	Imports by sea.	Re-exports by sea.	Quantity retained for consumption (Col. 2—Col. 3).
1	2	3	4
	Tons.	Tons.	Tons.
1934-35	205,915	2,697	203,218
1935-36	185,047	2,977	182,070
1936-37	19,267	9,148	10,119
First quarter of 1937-38.	2,681	1,513	1,168

NOTES.—(1) Figures for 1934-35 to 1936-37, have been adjusted so as to represent British India excluding Burma.

(2) The figures shown in the above table do not include imports into and re-exports from the Kathiawar States which are as follows:—

Years.	Imports by sea.	Re-exports by sea.
	Tons.	Tons.
1934-35	110,963	...
1935-36	87,964	25
1936-37	15,950	1,154
1937-38 (First quarter)	2,030	5,697

STATEMENT II.—Showing the imports of Sugar-candy into British India (excluding Burma).

Years.	Amount of duty collected.	Rate of duty per ton.	Estimated quantity (Col. 2 ÷ Col. 3).
1	2	3	4
	Rs.	Rs.	Tons.
1934-35	4,89,785	210	2,332*
1935-36	4,85,172	210	2,310
1936-37	4,61,950	210	2,200
First quarter of 1937-38	30,243	210	144

* According to special returns the actual quantity of sugar-candy imported during the eleven months April, 1934 to February, 1935, amounted to 2,557 tons.

(6) *Letter, dated the 27th October, 1937, from the Director General of Commercial Intelligence and Statistics, Calcutta.*

A reference is invited to para. 2 of this Department letter, dated the 22nd September, 1937. A copy of the reply of the Bengal Chamber of Commerce to the enquiry regarding the apparent disparity of prices of Java sugar at Calcutta and Bombay is placed below for your information. It has since been decided to discontinue the publication of Java sugar prices in the "Indian Trade Journal"—

Copy of letter No. 3064-1937, dated the 6th October, 1937, from the Secretary, Bengal Chamber of Commerce, Calcutta, to the Director General of Commercial Intelligence and Statistics, Calcutta.

PRICE OF JAVA SUGAR WHITE DUTCH STANDARD 25 AND/OR HIGHER.

With reference to the enquiry contained in your letter No. 14982, dated the 1st October, 1937, on the above subject, I have to inform you that the firm supplying the quotations for the "Prices Current" write as follows:—

"There have been no imports of White Java Sugar Dutch Standard 25 or higher into Calcutta since, we believe, the end of 1935. There is still a small stock out of the last importation but it is out of condition and retails well below replacing costs. We suggest that it is useless to continue quoting for Java Sugar in Calcutta as there are no imports nor is there any likelihood of these being resumed in the near future. Small quantities of Refined Java Sugar are still imported periodically but these are specialities and for retail purposes only."

Replies received from the Director of Contracts Army Head-Quarters, India, Simla.

(1) *Letter, dated the 18th June, 1937, from the Tariff Board, to the Director of Contracts, Army Headquarters, India, Simla.*

I am directed to refer to the Government of India, Department of Commerce, Resolution No. 127-T (1)/37, dated the 27th March, 1937, referring to the Tariff Board the question of the extent of protection required by the Indian Sugar Industry during the period from 31st March, 1938, to 31st March, 1946. As the Indian Army is one of the largest consumers of sugar, the Board are anxious to have the following information regarding the consumption of sugar by the Army for each of the last seven years:—

- (1) The quantity of (i) Indian Factory sugar, (ii) imported sugar consumed.
- (2) The prices at which (i) Indian factory sugar, (ii) imported sugar were obtained.
- (3) How does Indian factory sugar compare in quality with imported sugar and what improvement, if any, e.g., in keeping quality, in grain, in appearance has been marked in Indian factory sugar during recent years.

2. I am to request that if there is no objection, the above information may kindly be supplied to Secretary, Tariff Board, as early as possible.

(2) *Letter, dated the 2nd July, 1937, from the Director of Contracts, Army Headquarters, India, Simla.*

SUGAR PURCHASES FOR THE ARMY IN INDIA.

In reply to your letter No. 311, dated the 18th June, 1937, I have the honour to state that only brown sugar, indigenous or imported is purchased

by the Director of Contracts for the Army in India. Approximately 4,300 tons are purchased annually. The particulars of purchases for the last seven years are—

Year.	Quantity purchased.		Average purchase price per maund of 82½ lbs.		Remarks.
	Indian.	Imported.	Indian	Imported.	
	Tons.	Tons.	Rs. A. P.	Rs. A. P.	
1930-31 . . .	..	4,188	..	8 0 5	
1931-32 . . .	824	3,551	8 11 6	*6 7 9	*Exclusive of import duty.
1932-33 . . .	3,929	260	9 4 11	†12 3 0	†Inclusive of import duty.
1933-34 . . .	4,160	..	7 7 6	..	
1934-35 . . .	4,300	..	8 8 2	..	
1935-36 . . .	4,157	..	8 9 6	..	
1936-37 . . .	5,850	..	6 8 3	..	

2. The type of foreign sugar bought for the Army is the Java brown crystal sugar, 17 Dutch Standard (and above) which is the grading number given by the Java refiners to denote this quality.

The Indian sugar purchased corresponds in colour and grain to No. 19-D, in the table of revised 1936, standards issued by the Sugar Technologist, Indian Council of Agricultural Research of India.

3. It is suggested that the information asked for in sub-para. 3 of para. 1 of your letter under reply may please be obtained from the Sugar Technologist, Indian Council of Agricultural Research as the Director of Contracts is not in a position to furnish the details referred to.

4. Owing to the protection given to the Indian sugar industry, the price of Java sugar (brown) is not favourable and therefore purchases are confined to Indian sugar only.

Replies received from the Director, Nutritional Research Laboratory, Coonoor, Nilgiri Hills.

(1) *Letter, dated the 20th August, 1937, from the Tariff Board, to the Director, Nutritional Research Laboratory, Coonoor, Nilgiri Hills.*

I am directed to refer to Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937 (a copy of which is enclosed herewith) referring to the Tariff Board the question of the extent of protection required by the Sugar Industry during the period 31st March, 1938, to 31st March, 1946, and to say that in that connection the Board would like to know the relative nutritive values of gur and sugar and the comparative nutritive values of the main qualities of gur produced in India. I am to request that a note on the subject may kindly be sent to Secretary, Tariff Board, 1, Council House Street, Calcutta, as early as possible.

- (2) *Letter, dated the 30th August, 1937, from the Director, Nutrition Research, Coonoor, Nilgiri Hills.*

Reference your dated 20th August, 1937.

Analysis of a series of samples of gur have not yet been carried out in the Laboratories. The mineral content of gur is usually higher than that of sugar, certain minerals (notably iron) being added as impurities during the manufacturing process. It is difficult to assess the importance of the difference in terms of human nutrition.

Replies received from the Railway Board and Railways.

- (1) *Letter, dated the 18th May, 1937, from the Tariff Board to the Railway Board, Simla.*

In connection with the enquiry referred to the Tariff Board under the Government of India, Department of Commerce, Resolution No. 127-T. (1)/37, dated the 27th March, 1937, as to the extent of protection required for the Indian Sugar Industry during the period from 31st March, 1938, to 31st March, 1946, I am directed to request you to be so good as to supply the Board with information on the following points:—

- (a) The basis on which the present railway freight rates are calculated on the various railway systems in India for—

- (1) Sugarcane,
- (2) Sugar,
- (3) Molasses,
- (4) Bagasse,
- (5) Limestone, and
- (6) Manures,

and whether there have been any changes in the basis of calculation during the last seven years.

- (b) The total income derived from the transport of—

- (1) Sugarcane,
- (2) Sugar,
- (3) Molasses,

by the different railways for each year since 1930-31.

- (c) The views of the Railway Board on the question of the substitution of a maundage rate per mile for a flat rate at present charged for the transport of sugarcane.

- (2) *Letter, dated the 23rd July, 1937, from the Railway Board, Simla.*

RATES FOR SUGAR, ETC.

I am directed to say that a copy of your letter, dated the 18th May, 1937, asking for information regarding rates, etc., for sugar, sugarcane, molasses, bagasse, limestone and manures, has been forwarded to railways who have been asked to supply you direct with the particulars required on points (a) and (b) of the letter.

2. As regards (c) of your letter under reference, I am to say that it is not understood as to what precisely is meant by "flat rates at present charged for the transport of sugar", and I am to ask that particulars of such flat rates quoted by Railways concerned may be furnished to the Railway Board to enable them to reply to your query.

- (3) *Letter, dated the 26th July, 1937, from the Tariff Board, to the Railway Board, Simla.*

With reference to the second paragraph of your letter dated the 23rd July, 1937, I am directed to say that on some railways a fixed charge depending

on the size of the wagon is made for the transport of cane irrespective of the distance from which it is brought but within a maximum prescribed limit. For example, it is understood that the East Indian Railway charges Rs. 10 per four-wheeler wagon of approximately 450 Mds. carrying capacity for all distances upto 35 miles. It has been suggested to the Tariff Board that some factories would prefer a freight rate per maund per mile, sub-clause (c) of my letter, dated the 18th May, 1937, referred to this aspect of the question. The particulars of flat rates quoted by the railways concerned when they are received by this office will be furnished to the Railway Board as desired by you.

(4) Letter, dated the 22nd September, 1937, from the Railway Board, Simla.

RATES FOR SUGARCANE.

With reference to the correspondence ending with your letter, dated the 28th July, 1937, regarding the question of the substitution of a maundage rate per mile for a flat rate for sugarcane, I am directed to explain that the flat rate of Rs. 10 per wagon on the East Indian Railway to which reference has been made operates as a maximum charge for all distances upto 35 miles. Sugarcane is classified as 1st class, i.e., 0.38 pie per maund per mile, but with a view to facilitate the movement of cane to sugar factories, the East Indian Railway quote special rates on a reduced basis with the condition that the minimum charge for a wagon will be Rs. 10.

The rates for distances beyond 35 miles are, however, graduated in accordance with the distances in zones of 4 to 5 miles. The rates have been fixed in zones with a view to rounding off the charges for wagons in rupees. A copy of the table of calculated lump sum rates for sugarcane per 4-wheeled wagons over the East Indian Railway is attached.

2. As regards the suggestion to substitute the present method of charge by a weight basis, the East Indian and Bengal and North Western Railways to whom a reference was made do not consider this desirable in view of the special requirements of sugarcane traffic. Apart from the fact that facilities for weighing wagons do not in some cases exist at despatching stations or en route to a sugar mill, the nature of the traffic calls for special quick transit facilities, whereas the weighment would give rise to delays in transit and in the turn round of stock. The Railway Board agree with the views of these Railways.

Enclosure.

Table of calculated lump sum rates per four-wheeled broad gauge wagon for Sugarcane, Owner's risk; W-R; L., for distances from 1 to 300 miles.

For distances.	Rate per 4-wheeled Broad Gauge wagon.	For distances.	Rate per 4-wheeled Broad Gauge wagon.
Miles.	Rs.	Miles.	Rs.
Up to 35	10	170 to 173	43
36 „ 39	11	174 „ 177	44
40 „ 44	12	178 „ 181	45
45 „ 49	13	182 „ 185	46
50 „ 53	14	186 „ 189	47

For distances.	Rate per 4-wheeled Broad Gauge wagon.	For distances.	Rate per 4-wheeled Broad Gauge wagon.
Miles.	Rs.	Miles.	Rs.
54 to 58	15	190 to 193	48
59 „ 63	16	194 „ 197	49
64 „ 67	17	198 „ 201	50
68 „ 72	18	202 „ 205	51
73 „ 77	19	206 „ 209	52
78 „ 81	20	210 „ 213	53
82 „ 85	21	214 „ 217	54
86 „ 89	22	218 „ 221	55
90 „ 93	23	222 „ 225	56
94 „ 97	24	226 „ 229	57
98 „ 101	25	230 „ 233	58
102 „ 105	26	234 „ 237	59
106 „ 109	27	238 „ 241	60
110 „ 113	28	242 „ 245	61
114 „ 117	29	246 „ 249	62
118 „ 121	30	250 „ 253	63
122 „ 125	31	254 „ 257	64
126 „ 129	32	258 „ 261	65
130 „ 133	33	262 „ 265	66
134 „ 137	34	266 „ 269	67
138 „ 141	35	270 „ 273	68
142 „ 145	36	274 „ 277	69
146 „ 149	37	278 „ 281	70
150 „ 153	38	282 „ 285	71
154 „ 157	39	286 „ 289	72
158 „ 161	40	290 „ 293	73
162 „ 165	41	294 „ 297	74
166 „ 169	42	298 „ 300	75

(5) *Letter, dated the 3rd September, 1937, from the Agent, Eastern Bengal Railway, Calcutta.*

Re RATES FOR SUGAR, ETC.

Reference to your letter of 18th May, 1937, to the Railway Board.

With reference to paragraph 1 of Railway Board's letter No. 4440-T. of the 23rd July, 1937, I have the honour to furnish below the earnings of the Eastern Bengal Railway system derived from the transport of sugar and molasses for the years 1930-31 to 1936-37 and sugarcane for the year 1936-37 only. As prior to 1936-37 sugarcane was not treated as one of the principal commodities on this Railway, no statistics as to the income derived from its transport before 1936-37 are available.

Year.	Commodities.		
	Sugar. Rs.	Molasses. Rs.	Sugarcane. Rs.
1930-31 . .	6,83,972	3,80,982	...
1931-32 . .	4,52,211	3,88,326	...
1932-33 . .	2,89,617	3,75,747	...
1933-34 . .	2,61,837	3,14,328	...
1934-35 . .	2,62,447	3,48,682	...
1935-36 . .	2,87,254	3,79,649	...
1936-37 . .	3,88,025	3,78,930	2,36,389

2. As regards freight rates on sugarcane, sugar, molasses, bagasse, limestone and manures, I enclose herewith a statement shewing the freight rates on each commodity in force over this Railway from 1930-31 up to the present time.



Articles. 1	Period for which the rates were in force. 2	Rate. 3	Basis of the rate. 4
Sugar . . .	From January 1930 to January 1931.	C/K Schedule—Owner's risk, C/300 . 2nd class—Railway risk . . .	Pie per md. per mile. For the 1st and up to 150 miles . . . 380 Plus 151 to 250 miles . . . 250 Plus 251 to 400 miles . . . 125 Plus 401 and upwards . . . 115 For any distance . . . 43
		<p style="text-align: center;"><i>Terminal charges.</i> NOTE.—In addition to the above rates, the following terminal charges were leviable:— (i) In the case of booking to and Kidderpore Docks and Jetties— For local booking . . . 7 pies per md. for both ends. For through booking . . . 4 pies per md. (ii) In the case of booking to and from stations other than Kidderpore Docks and Jetties— For local booking . . . 6 pies per md. for both ends. For through booking . . . 3 pies per md.</p>	
	From 1st February 1931 to this date.	C/J Schedule—Owner's risk, C/300 .	Pie per md. per mile. For the 1st and up to 150 miles . . . 380 Plus 151 miles to 250 miles . . . 333

Plus 251 miles to 500 miles	. . .	200
Plus 501 miles to 700 miles	. . .	130
Plus 701 miles and upwards	. . .	100
		42

2nd class—Railway risk . . .

NOTE.—From 1st February, 1931 to 14th March, 1931, the following were the terminal charges on traffic booked to and from Kidderpore Docks and Jetties:—

For local booking . . . 9 pies per md. for both ends.

For through booking . . . 5 pies per md.
NOTE.—From 1st February, 1931 to 31st December, 1935, in the case of booking to and from stations other than Kidderpore Docks and Jetties and from 15th March, 1931 to 31st December, 1935, in the case of booking to and from Kidderpore Docks and Jetties, the following were the terminal charges:—

For local booking . . . 8 pies per md. for both ends.

For through booking . . . 4 pies per md.
NOTE.—From 1st January, 1936, in local booking and from 1st February, 1936, in through booking the terminal charges both in respect of traffic booked to and from (1) Kidderpore Docks or Jetties, and (2) Stations other than Kidderpore Docks and Jetties, have been revised as under and these charges are still in force—

For local booking . . . 10 pies per md. for both ends.

For through booking . . . 5 pies per md.



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Articles. 1	Period for which the rates were in force. 2	Rate. 3	Basis of the rate. 4	Pie per md. per mile.
Manures . .	From January 1930 to 31st May, 1932.	C/FF Schedule—Owner's risk . .	For any distance . . . .	.100
		1st class—Railway risk	Ditto . . . . .	.38
	From 1st June, 1932 to 30th September, 1935.	C/FF Schedule—Owner's risk W/270 Broad Gauge, W/160 Metre Gauge or Narrow Gauge, L.		.100
		C/R Schedule—Owner's risk on actual weight.	For the 1st and up to 150 miles . .	.140
			Plus 151 and above . . . . .	.110
		1st class—Railway risk . . . .		.38
	From 1st October, 1935 to 31st December, 1935.	C/FF Schedule—Owner's risk, W/300 Broad Gauge, W/160 Metre Gauge or Narrow Gauge, L.		.100
		C/N Schedule—Owner's risk, L . .	For the 1st and up to 75 miles . .	.333
			Plus 76 miles to 150 miles . . . .	.200
			Plus 151 miles to 300 miles . . . .	.170
			Plus 301 miles to 400 miles . . . .	.125

Limestone	From 1st January, 1936, to this date.	1st class—Railway risk	Plus 401 and above	100
		C/R Schedule—Owner's risk, W/300 Broad Gauge, W/160 Metre Gauge or Narrow Gauge, L.		35
		C/N Schedule—Owner's risk, L . . .	See above.	
		1st class Railway risk		
	From January, 1930 to 31st October, 1935.	C/O Schedule—Owner's risk, C. C., L.	For the 1st and up to 75 miles . . .	300
			Plus 76 miles to 400 miles . . .	170
			Plus 401 and above	100
		1st class—Railway risk	For any distance	38
	From 1st November, 1935, to this date.	C/N Schedule—Owner's risk, C. C., L.	See above against Manures.	
		1st class—Railway risk		38

NOTE.—The above rates are also subject to the terminal charges as shown in column 4 against "Sugar".

Pie per md.
per mile.

NOTE.—The above rates are also subject to the terminal charges as shown in column 4 against "Sugar".

Articles. 1	Period for which the rates were in force. 2	Rate. 3	Basis of the rate. 4
Bagasse. . .	<p>From January, 1930 to 14th April, 1933.</p> <p>From 15th April, 1933 to 31st December, 1936.</p>	<p>4th class—Railway risk . . .</p> <p>C/N Schedule—Owner's risk, p. . .</p>	<p>Pie per md. per mile. '62</p> <p>For any distance</p> <p>See column 4 against "Manures".</p> <p>This schedule (C/N) was applicable to baled bagasse and only for traffic from stations on this Railway (except Tangla-Rangapara Extension) to <i>via</i> Kathar for stations on Bengal and North Western Railway.</p>
Molasses . .	From January, 1930 to 31st May, 1932.	C/L Schedule—Owner's risk, L. .	<p>For the 1st and up to 100 miles . . . '380</p> <p><i>Plus</i> 101 miles to 300 miles . . . '220</p> <p><i>Plus</i> 301 miles to 600 miles . . . '130</p>


NOTE.—The above rates are subject to the terminal charges as shewn in column 4 against "Sugar", except in the case of 4th class rate in which case the terminal charges are higher by 2 pies in local booking and by 1 pie in through booking.




<p>From 1st June, 1932 to 14th September 1935.</p>	<p>2nd class—Railway risk, L.</p> <p>C/L Schedule—Owner's risk, W/120 Broad Gauge, W/81 Metre Gauge or Narrow Gauge, L.</p> <p>2nd class—Railway risk, L.</p>	<p>Plus 601 miles and above</p> <p>For any distance</p> <p>See above.</p>	<p>110</p> <p>42</p>
<p>From 15th September 1935, to this date.</p>	<p>C/L Schedule—Owner's risk, W-120 Broad Gauge, W-81 Metre Gauge or Narrow Gauge, L.</p> <p>1st class—Owner's risk, L.</p> <p>2nd class—Railway risk, L.</p>	<p>See above.</p>	<p>38</p> <p>42</p>
<p>From January 1930 and until the middle of February 1933, no reduced rate was in force and the classified rate as shewn in columns 3 and 4 was applicable.</p>	<p>1st class—Railway risk</p>	<p>For any distance</p>	<p>38</p>
<p>From the middle of February 1933, reduced owner's risk rate for the commodity was introduced which underwent revisions from time to time as shewn below.</p>	<p>1st class—Railway risk</p>	<p>For any distance</p>	<p>38</p>

NOTE.—The above rates are subject to the terminal charges as shewn in column 4 against "Sugar".

Pie per md.
per mile.

Articles. 1	Period for which the rates were in force. 2	Rate. 3	Basis of the rate. 4
Sugarcane— <i>contd.</i>	From 18th February 1933 to 14th April 1933		3½ pies per ton or part of a ton per mile at Owner's risk, CC.
			<p>NOTE.—For local booking only. In addition to this charge the following terminal charges were levied :—</p> <p>(i) In the case of booking to and from Kidderpore Docks and Jetties—</p> <p>Per 4 or 6-wheeled vehicle . Rs. 7 for both ends.</p> <p>Per Bogie vehicle . . . Rs. 14 for both ends.</p> <p>(ii) In the case of bookings to and from stations other than Kidderpore Docks and Jetties—</p> <p>Per 4 or 6-wheeled vehicle . Rs. 6 for both ends.</p> <p>Per Bogie vehicle . . . Rs. 12 for both ends.</p> <p>3 pies per ton or part of a ton per mile at Owner's risk, CC</p>
	From 15th April 1933 to 14th February 1934.		<p>NOTE.—In local booking only. In addition to this rate terminal charges as stated above were levied.</p>

<p>From 15th February 1934 to 31st December 1935—</p> <p>(i) When booked locally between any two Broad Gauge stations.</p>	<p>C/C Schedule—Owner's risk, L, when booked in wagons of marked floor area (without terminals).</p>	<p>For any distance</p>	<p>Pie per md. per mile.</p>
<p>(ii) When booked locally between any two Metre Gauge stations.</p>	<p>When booked in wagons with no floor area marked thereon.</p>	<p>Re. 0.5-0 per 4-wheeler per mile at Owner's risk, W/R, L (without terminals).</p>	<p>300</p>
<p>(iii) When booked locally from a Broad Gauge station to a Metre Gauge station.</p>	<p>C/C Schedule—Owner's risk, L, when booked in wagons of marked floor area (without terminals).</p>	<p>Re. 0.3-6 per 4-wheeler per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>
<p>(iv) When booked from a Metre Gauge station to a Broad Gauge station.</p>	<p>When booked in wagon with no floor area marked thereon.</p>	<p>Re. 0.7-0 per bogie per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>
<p>(v) When booked from Bengal and North Western Railway or Bengal Doonars Railway stations to Metre Gauge stations and <i>vice versa</i>.</p>		<p>Re. 0.5-0 per 4-wheeler per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>
		<p>Re. 0.4-0 per 4-wheeler per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>
		<p>Re. 0.8-0 per bogie or 8-wheeled vehicle per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>
		<p>Re. 0.3-6 per 4-wheeler per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>
		<p>Re. 0.7-0 per bogie vehicle per mile at Owner's risk, W/R, L (without terminals).</p>	<p>W/R, L</p>

Articles.	Period for which the rates were in force.	Rate.	Basis of the rate.
1	2	3	4
Sugar cane— <i>contd.</i>	<p>From 15th February 1934 to 31st December 1935—<i>contd.</i></p> <p>(vi) When booked from Bengal and North Western Railway stations or Bengal Dockers Railway stations to a Broad Gauge station and <i>vice versa</i>.</p> <p>(vii) When booked locally between any two Broad Gauge stations by a route which includes an intervening Metre Gauge Section.</p> <p>From 1st January 1936 to this date.</p> <p>(A) <i>In local booking over the Eastern Bengal Railway—</i></p> <p>(i) From any Broad Gauge station to any Broad Gauge station.</p> <p>(ii) From any Broad Gauge station to any Metre Gauge station.</p>	 <p>(a) Per 4-wheeled vehicle the marked floor area of which is 170 sq. ft. or less. W schedule (without terminals).</p> <p>(b) Per 4-wheeled vehicle the marked floor area of which is over 170 sq. ft. and less than 200 sq. ft. X schedule rates (without terminals).</p> <p>(c) Per 4-wheeled vehicle the marked floor area of which is 200 sq. ft. and over. @ 5½ annas per vehicle per mile upto 70 miles <i>plus</i> for distances above 70 miles @ 5 annas per vehicle per mile (without terminals).</p>	<p>Re. 0-4-0 per 4-wheeler per mile at Owner's risk, W/R, L (without terminals).</p> <p>Re. 0-8-0 per bogie vehicle per mile at Owner's risk, W/R, L (without terminals).</p> <p>Same as in columns 3 and 4 against item (i) of this page.</p>
Per 4 /or 6-wheeled vehicle per mile.		Rs. a. p.	
0 4 0		0 5 0	

(iii) From any Metre Gauge station to any Metre Gauge station.	(a) Per 4-wheeled vehicle of any tonnage or type. At the rate of 4 annas per vehicle per mile up to 70 miles <i>plus</i> @ 3 annas per vehicle per mile for distances in excess of 70 miles (without terminals).
(iv) From any Metre Gauge station to any Broad Gauge station.	(b) Per Bogie vehicle of any tonnage or type. Double the rate for a 4-wheeled vehicle (without terminals).
(B) <i>In through booking with Foreign Railways—</i>	
(i) From any station on the Bengal and North Western Railway or Bengal Dooars Railway to any Metre Gauge station on the Eastern Bengal Railway and <i>vice versa</i> .	(a) Per 4-wheeled vehicle of any tonnage or type. At the rate of 4 annas per vehicle per mile up to 70 miles <i>plus</i> @ 3 annas per vehicle per mile for distances in excess of 70 miles (without terminals).
(ii) From any Metre Gauge station on Eastern Bengal Railway to Arikhola (Assam Bengal Railway).	(b) Per bogie vehicle of any tonnage or type. Double the rate for a 4-wheeled vehicle (without terminals).
(iii) From any station on the Bengal and North Western Railway or Bengal Dooars Railway to any Broad Gauge station on Eastern Bengal Railway and <i>vice versa</i> .	

N.B.—In addition to the above rates and terminal charges, Transhipment charges are leviable at points of break of gauge or for transfer from Rail to Steamer and *vice versa*. Ghat charges, Haulage charges, Siding charges, etc., are also levied, as the case may be, for details of which Chapters IX and X of the E. B. Ry. Goods Tariff, Pamphlet No. I Series 11 may be referred to.

NOTE.—For explanations of symbols used in this statement pages 123 and 124 of Indian Royal Cavalry Accounts Code Tariff No. 20 may be seen (cutting enclosed).

(6) *Letter, dated the 9th September, 1937, from the Agent, East Indian Railway, Calcutta.*

With reference to items (a) and (b) of your letter of 18th May, 1937, to the Secretary, Railway Board, forwarded to this Railway for reply under the Board's endorsement No. 4440-T. of 23rd July, 1937, I beg to enclose statements giving the information desired, in so far as it has been possible to do so.

Enclosure.

SUGARCANE.

Classified 1st class=38 pie per maund per mile *plus* terminals and short distance charges. These charges are:—

	Prior to 1st April, 1936.	From 1st April, 1936.
	Pies per maund.	Pies per maund.
Terminal at booking station . . .	3	4
Terminal at destination station . . .	3	4
Short distance charge for traffic under 75 miles	3	3

1930.

The basis of charge for sugarcane was the C. R. schedule scale *plus* terminals, subject to the conditions OR, C-C, L, i.e., owner's risk, charge to be levied on the marked carrying capacity of the wagon used, owners to load and unload.

The basis of the C. R. scale is:—

	Pie per maund per miles.
1 to 150 miles	140
<i>Plus</i> for distance over 150 miles	110

1932.

(i) In January, 1932 a slight alteration was effected by a reduction in the total terminal charge of 6 pies per maund on sugarcane in local booking to 3 pies per maund and a reduction in the short distance charge from 3 pies to 1 pie.

(ii) In December, 1932, when demands for transport of sugarcane for crushing developed, special rates were quoted on the basis of As. 5 per four-wheeled wagon per mile *plus* Rs. 5 per wagon for distances under 75 miles subject to a minimum of Rs. 10 per wagon.

1933.

From 1st October, 1933, a revised scale was adopted for sugarcane booked to Sugar Mills as follows:—

	Per wagon per mile.
	As. p.
1 to 50 miles	5 0
<i>Plus</i> for extra distances up to 100 miles	3 0
<i>Plus</i> for extra distances over 100 miles up to 114 miles	2 0
For distances 115 miles and over flat rate	3 9

These rates were subject to a minimum of Rs. 7 per four-wheeled wagon. Siding charges were levied in addition but were reduced from '38 pies per maund per mile to a lump sum charge of Re. 1 per wagon per mile.

1934.

From 1st November, 1934, the scale was further revised to a rate of As. 3-4 per wagon mile subject to a minimum of Rs. 7 per wagon.

The separate siding charge was also removed and the distance over the siding included in the total distance for charge at the foregoing scale.

1935.

From 1st November the scale of charges was increased to As. 4 per wagon mile subject to a minimum increase of Rs. 3 per wagon and a minimum charge of Rs. 10. A table of calculated rates at this scale which is still in force is attached.

Statistics.

Separate statistics of sugarcane traffic and earnings prior to 1934-35 are not available. Figures available for 1933-34 cover the period November to March and are therefore shown below:—

	Tons.	Rs.
1933-34 . . .	349,172	4,07,873 (Five months only).
1934-35 . . .	636,497	5,32,138
1935-36 . . .	866,119	8,21,415
1936-37 . . .	860,402	7,48,498

If the crushing season November to June each year is considered the figures are:—

	Tons.	Rs.
November, 1933 to June, 1934 . . .	375,192	4,47,780
November, 1934 to June, 1935 . . .	659,765	5,28,915
November, 1935 to June, 1936 . . .	934,457	9,39,444
November, 1936 to June, 1937 . . .	1,041,772	8,28,766

SUGAR.

Previously classified 2nd class=.42 pie per maund per mile; since 1st April, 1937, classified 2-A=.46 pie per maund per mile *plus* terminals and short distance charges.

These charges are:—

	Prior to 1st April, 1936.	From 1st April, 1936.
	Pies per maund.	Pies per maund.
Terminal at booking station . . .	3	4
Terminal at destination . . .	3	4
Short distance charge for traffic under 75 miles	3	3

1930.

General basis of charge 1st class at owner's risk=.38 pie per maund per mile *plus* terminals.

1931.

From 1st February, the general basis of charge was 2nd class = .42 pie per maund per mile *plus* terminals. Traffic from Howrah to station 601 miles and over continued to be charged at 1st class rates at owner's risk.

1934 to date.

Since 1st January, 1934, the general basis of charge has been the C/J scale *plus* terminals for distances 250 miles and over subject to the differential rule.

Below this distance the general basis of charge is 2nd class (the revised classification of 2A has not been adopted on the East Indian Railway).

The basis of the C/J schedule scale is:—

	Pie per maund per mile.
1 to 150 miles . . . . .	.380
<i>Plus</i> for extra distances over 150 miles and up to 250 miles . . . . .	.333
<i>Plus</i> for extra distances over 250 miles and up to 500 miles . . . . .	.200
<i>Plus</i> for extra distances over 500 miles and up to 700 miles . . . . .	.130
<i>Plus</i> for extra distances over 700 miles . . . . .	.100

The rate for 250 miles at this scale applies differentially down to 216 miles being cheaper than the 2nd class rate.

Special rates.

In addition to the C. J. scale, numerous station to station rates are quoted from sugar producing centres to various points, in particular to Port towns such as Calcutta, Vizagapatam, Cocanada, Madras, Cochin and other Ports in South India, Bombay and Karachi, and also to Ahmedabad. Port rates have in general been fixed with due regard to the competitive water route open to factories on the Bengal and North-Western Railway and on the East Indian Railway in Bihar. The rates to Calcutta have been readjusted from time to time according to the position of the competitive river route. The rates were last revised in March, 1937, and a statement of the current special rates in force to Calcutta is appended.

Statistics.

Figures of traffic and earnings from sugar from 1930-31 onwards are given below:—

	Tons.	Rs.
1930-31	158,612	25,61,663
1931-32	140,496	15,82,510
1932-33	160,818	15,61,214
1933-34	275,256	27,73,035
1934-35	277,025	26,69,163
1935-36	280,032	23,87,175
1936-37	402,312	32,17,602

MOLASSES.

Molasses were previously classified 2nd class under the head "Jagree" = .42 pie per maund per mile *plus* terminals, but are now separately classified 2 RR and 1 OR = .38 pie per maund per mile.

Terminal and short distance charges are the same as for sugar.

1930.

Jagree including molasses was charged at the C/L scale at owner's risk *plus* terminals. The basis of the C/L scale is:—

	Pie per maund per mile.
1 to 150 miles	·380
<i>Plus</i> for extra distances over 150 miles and up to 300 miles	·220
<i>Plus</i> for extra distances over 300 miles and up to 600 miles	·130
<i>Plus</i> for extra distances over 600 miles	·110

1932.

From 1st January the C/L scale for Jagree including molasses was withdrawn. The general basis of charge adopted was 1st class = ·38 pie per maund per mile *plus* terminals.

1933.

From 15th April the C/N scale *plus* terminals was adopted for molasses in wagon loads. The basis of the C/N scale is:—

	Pie per maund per mile.
1 to 75 miles	·333
<i>Plus</i> for extra distances over 75 miles and up to 150 miles	·200
<i>Plus</i> for extra distances over 150 miles and up to 300 miles	·170
<i>Plus</i> for extra distances over 300 miles and up to 400 miles	·125
<i>Plus</i> for extra distances over 400 miles	·100

This scale is still in force and applies to wagon loads of 270 maunds if packed or on the marked carrying capacity of the tank wagon used if in bulk.

Special rates.

Special reduced rates mainly on the basis of -10 pie per maund per mile *plus* terminals are quoted for traffic to Calcutta.

Statistics.

Complete separate statistics for molasses are not available prior to 1936-37.

The traffic in 1936-37 was:—

	Tons.	Rs.
Bulk	59,008	4,11,298
Packed	21,774	1,58,459
Total	80,782	5,69,757

Prior to 1936-37 the figures are included under a common statistical head "Gur, Jagree and Molasses".

LIMESTONE.

Classified 1st class = ·38 pie per mile but in wagon loads is charged at the C/N scale which has been in force since 1930. The terminal in local booking is 2 pies instead of 8 pies. The basis of the scale is shown under molasses. In addition there are a large number of special station to station rates lower than the C/N scale.

Statistics.

Statistics are maintained under the head "Lime and Limestone" and not for limestone separately. Figures prior to 1933-34 are not available.

	Tons.	Rs.
1933-34	196,414	9,22,360
1934-35	270,573	10,56,740
1935-36	229,883	9,86,526
1936-37	208,125	9,96,681

BAGASSE.

Bagasse not being separately classified comes under the classified head "Waste Refuse" 4 R.R.=62 pie per maund per mile *plus* terminals as shown under Sugar. When consigned in wagon loads to Paper Mills is classified as Fibrous Materials for Paper manufacture and charged at the C/R scale *plus* terminals.

The basis of the C/R scale is:—

	Pie per maund per mile.
1 to 150 miles	140
<i>Plus</i> for extra distances over 150 miles	110

No statistics of traffic and earnings are available.

MANURES.

Manures are classified 1st class=38 pie per mile *plus* terminals. Terminals are the same as shown under sugarcane.

1930.

General basis of charge for manures in wagon loads at owner's risk was the C/FF scale *plus* terminals, etc. The basis of the C/FF scale is 10 pie per maund per mile for all distances.

The basis of charge for less than wagon loads was the C/R scale *plus* terminals.

The basis of the C/R scale is:—

	Pie per maund per mile.
1 to 150 miles	140
<i>Plus</i> for distances over 150 miles	110

The scale remained in force till 1936.

1936.

From 1st January, the basis of charge for wagon loads was raised to the C/R scale as shown above. For less than wagon loads the C/N scale was adopted. The basis of the C/N scale is shown under Molasses.

Statistics.

Figures of traffic and earnings from Manures are:—

	Tons.	Rs.
1930-31	17,539	1,09,057
1931-32	17,417	1,36,329
1932-33	16,256	1,25,564
1933-34	20,605	1,36,324
1934-35	21,025	1,35,962
1935-36	31,406	2,03,215
1936-37	31,560	2,49,115

The figures do not include oilcake which come under the statistical head "Fodder" and for which no separate figures are available.

Statement showing existing special rate per maund for Sugar at owner's risk from the undermentioned Bengal and North-Western Railway centres to Howrah via Mokamehghat.

Station from	Bengal and North-Western.	East Indian.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Babhnan	0 9 3 267*	0 6 11 281	1 0 2 548
Bagaha	0 7 6 195*	0 7 2 281	0 14 8 476
Baitalpur	0 6 6 182*	0 6 8	0 13 2 463
Balrampur	0 10 9 321*	0 7 3	1 2 0 602
Barhni	0 9 6 278*	0 7 0	1 0 6 559
Basti	0 8 4 248*	0 7 2	0 15 6 529
Bhatni	0 6 1 165*	0 6 6	0 12 7 446
Biswan	0 12 2 381*	0 8 0	1 4 2 662
Campianganj	0 8 1 229*	0 6 9	0 14 10 510
Captainganj	0 7 10 214*	0 6 5	0 14 3 495
Chakia	0 5 1 100*	0 6 3	0 11 4 381
Chaudpatia	0 6 7 157*	0 6 9	0 13 4 438
Chhitauni	0 8 10 245*	0 6 6	0 15 4 526
Gauri Bazar	0 6 9 187*	0 6 7	0 13 4 468
Ghughli	0 8 2 223*	0 6 5	0 14 7 504
Harinagar	0 7 1 179*	0 7 0	0 14 1 460
Harkhua	0 5 11 155*	0 6 4	0 12 3 436
Hasanpur Rd.	0 3 11 66*	0 7 2	0 11 1 347

* Distances are from Simaria Ghat.

Station from	Bengal and North-West- ern.	East Indian.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Hathua	0 5 7 146*	0 6 4	0 11 11 427
Jarwal Rd.	8 5 0 332*	0 5 6	0 13 11 613
Jhusi	0 7 1 296*	0 5 6	0 12 7 577
Kathkuiyan	0 7 1 189*	0 6 4	0 13 5 470
Khada	0 8 7 239*	0 6 6	0 15 1 520
Lakshniganj	0 7 8 207*	0 6 4	0 14 0 488
Lohat Siding	0 4 5 82*	0 7 3	0 11 8 363
Walterganj	0 9 3 252*	0 6 4	0 15 7
Mahrajganj	0 5 3 128	0 6 0 281	0 11 3 409
Mairwa	0 5 8 148	0 6 4	0 12 0 429
Majhawlia	0 6 2 141	0 6 7	0 12 9 422
Mar Howrah	0 4 8 113	0 6 1	0 10 9 394
Matihari	0 5 8 120	0 6 4	0 12 0 401
Motipur	0 4 7 86	0 6 3	0 10 10 367
Munderwa	0 8 2 239	0 7 0	0 15 2 520
Muzaffarpur	0 4 0 70	0 6 3	0 10 3 351
Narkatiaganj	0 6 11 169	0 6 10	0 13 9 450
Nawabganj (Gonda)	0 10 0 299	0 7 3	1 1 3 580
Nirmali	0 5 1 105	0 7 5	0 12 6 386

* Distances are from Simaria Ghat.

Stations from	Bengal and North-Western.	East Indian.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.
Pachrukhi	0 5 2 131	0 6 2	0 11 4 412
Padrauna	0 7 4 194	0 6 3	0 13 7 475
Pharenda	0 8 4 234	0 6 8	0 15 0 515
Pipraich	0 7 8 220	0 6 10	0 14 6 501
Ramkola	0 7 7 204	0 6 4	0 13 11 485
Riga	0 5 5 109	0 7 2	0 12 7 390
Sagauli	0 6 1 133	0 6 5	0 12 6 414
Sakri	0 4 2 73	0 7 2	0 11 4 354
Samastipur	0 2 11 38	0 7 2	0 10 1 319
Sardar Nagar	0 6 11 197	0 6 9	0 13 8 478
Sasa Musa	0 6 2 159	0 6 2	0 12 4 440
Savan	0 5 5 135	0 6 1	0 11 6 416
Sidhwalia	0 5 5 142	0 6 4	0 11 9 423
Siswabazar	0 8 4 230	0 6 6	0 14 10 511
Sitalpur	0 3 11 76	0 5 6	0 9 5 357
Tahsil Deoria	0 6 5 178	0 6 7	0 13 0 459
Tamkuki Road	0 6 8 175	0 6 3	0 12 11 456
Tarearai	0 4 0 69	0 7 3	0 11 3 350
Tulsipur	0 10 2 303	0 7 2	1 1 4 584

Statement showing existing special rates per maund for Sugar from the undermentioned stations to Howrah.

Stations from	Distances.	Condition s.	Rate per maund.
			Ra. a. p.
Bihta	355	Own Risk	0 8 3
Dehri-on-Sono	345	Own Risk	0 8 3
Ganga Deshi } Sugar Mill . } Siding, Buxar }	412	Own Risk	0 8 9
Guraru	306	Own Risk	0 7 11
Via Sasaram	356	Own Risk	0 8 6

(7) *Letter, dated the 30th August, 1937, from the Agent, Bengal and North-Western Railway Co., Ltd., Gorakhpur.*

RATES FOR SUGAR, ETC.

With reference to letter No. 4440-T., dated the 23rd July, 1937, from the Secretary, Railway Board, to your address—a copy of which has been sent to us for necessary action—I beg to enclose a copy of my Traffic Manager's letter No. R. 1/9, dated the 27th August, 1937, dealing with the basis on which our present freight rates are calculated on sugarcane, etc. I also enclose a statement showing the total yearly income derived from sugarcane, sugar and molasses from the year ending March, 1931.

Enclosure.

Copy of a letter No. R. 1/9, dated the 27th August, 1937, from the Traffic Manager, Bengal and North-Western Railway, Gorakhpur, to the Agent, Bengal and North-Western Railway, Gorakhpur.

RATE FOR SUGAR, ETC.

Your No. 4543 of 28th July, 1937.

The commodities referred to in item (a) of the Secretary, Tariff Board's letter No. 204 of 18th May, 1937, copy received under your above are charged over this Railway as follows:—

(1) *Sugarcane.*

Sugarcane when booked locally to factory stations on this Railway is charged at wagon mile rate as shown in the attached Local Rate Advice No. 7 of 1934. The rates notified in this circular have been in force, with a slight modification, since the last seven years.

During the earthquake in 1934 the following reduced rates were specially quoted with a view to assist the ryots in the distressed area:—

Stations		Rate per 4-wheeled wagon.
From	To	
Any station in [earthquake area.	(i) Factories between Sonapore and Gorakhpur	Rs. a. p. 23 0 0
	(ii) Factories between Gorakhpur and Basti	25 0 0
	(iii) Factories West of Basti	28 0 0
	(iv) Shahganj	28 0 0
	(v) Dehri-on-Sone <i>via</i> Benares Cantonment or Jaunpur	29 12 0
	(vi) Bihta <i>via</i> Mokameh Ghat	22 0 0
	(vii) Setabganj, Gopalpur and Beldanga <i>via</i> Katihar	1 ¹ / ₂ th pie per maund per mile.

During the last season special reduced rates, as shown in Appendix A to the attached special Local Rate Advice No. 3-B. of 1937, were quoted to assist ryots in disposing of cane left over in the field. These rates remained in force from 24th April, 1937 to 15th June, 1937.

(2) Sugar.

In absence of special rates sugar traffic at Railway Risk is charged at 2nd class rates (.42 pie per maund per mile) *plus* terminals and transshipment charges.

The bulk of sugar traffic is, however, carried at special rates shown in this Railway's Sugar Pamphlet No. 2 of 1936, a copy of which is sent herewith. At present special rates are in force to the following destinations:—

Locally—

To Cawnpore, Barabanki, Allahabad City, Lucknow and Sitapur.

In through booking—

(i) Generally *via* the following Junctions:—

Via Katihar, *via* Cawnpore, *via* Allahabad City, *via* Barabanki and *via* Sitapur.

(ii) Port stations, *viz.*, Howrah, Rangoon, Bombay, Karachi, Cocanada, Vizagapatam, Calicut, Mangalore, Ernaculam, Tellicherry, Cannanore and Tuticorin.

(iii) Certain riverine stations on the Assam Bengal and Eastern Bengal and Dibru-Sadiya Railways *via* Katihar.

(iv) Certain stations on the Bombay, Baroda and Central India Railway and *via*, *via* Cawnpore (Anwarganj).

The following scale was adopted in 1932 for the calculation of special rates over this Railway:—

Distance. Miles.	Pie per maund per mile.	
1 to 100	42	} <i>plus terminals.</i>
+ 101 to 250	38	
+ 251 to 350	30	
+ 351 to 400	25	
+ Above 400	20	

and present rates for local traffic have been calculated on this scale with slight modifications.

A statement is enclosed showing rates in force at present in local booking and variations in rates during the last seven years.

Special rates for through traffic *viâ Katihar, viâ Cawnpore, viâ Allahabad City, viâ Barabanki and viâ Sitapur* are also based on the above scale except in the case of traffic *viâ Barabanki* in which case a further reduction of 6 pies to 28 pies per maund has been made in regard to traffic moving to Delhi and other North-Western Railway stations. This was done with a view to encourage sugar from our area to move in Punjab and other Northern markets. For the same reason a flat through rate of Re. 1 per maund was introduced with effect from 1st October, 1936, from all factories in North Bihar to *viâ Saharanpore*.

PORTS.

Howrah.—Special rates for sugar from factories to Howrah were first introduced in the year 1932. Since then Howrah rates have undergone several changes. These rates were quoted with a view to enable our factories to capture the Calcutta market. In many cases rates were also reduced to counteract the effect of low rates quoted by the Steamer Co. A statement is enclosed showing the rates during the last seven years.

Rangoon.—Arrangements for through booking of sugar to Rangoon have been made with effect from 1st February, 1937. The rates charged over this Railway are the same as that for Howrah.

Karachi, Bombay, Madras, Mangalore, Vizagapatam, Cocanada, Tellicherry, Cannanore, Calicut, Ernadulam and Tuticorin.—Traffic to these ports is comparatively of a recent origin. A statement showing variations in rates during the last seven years is attached.

Certain riverine stations on the Eastern Bengal, Assam Bengal and Dibru-Sadiya Railways viâ Katihar.—Special through rates from factory stations to the riverine stations in Bengal and Assam have been quoted as shown in this Railway's Sugar Pamphlet No. 2. These rates were based on those obtainable by the river route.

Certain stations on the Bombay, Baroda and Central India Railway and viâ, viâ Cawnpore (Anwarganj).—In this case also special rates have been quoted with a view to stimulate long distance traffic.

(3) Molasses.

The following rates are in force for molasses:—

1st class rates.—(88 pie per maund per mile) at Owner's Risk.

2nd class rates.—(42 pie per maund per mile) at Railway Risk as per Indian Railway Conference Association Goods Tariff *plus* the usual terminals and transshipment charges.

Prior to 15th September, 1935, the classified rate for this traffic was only 2nd class at Railway Risk; there being no alternative owner's risk rate.

There has been no alteration in the basis of 1st and 2nd class rates during the period under review.

This traffic is generally charged at C/D scale (.25 pie per maund per mile) plus the usual terminals and transhipment charges. This scale applies to traffic booked 100 miles or above; rates for 100 miles being charged for distances short of 100 miles differentially. This schedule has been in force for the last seven years.

SPECIAL RATES.

(a) For molasses in tank wagons intended for export out of India.—The rates in force at present are calculated on the following basis:—

Distance.	Pie per maund per mile.
1 to 80 miles . . . . .	.13
Above 80 miles . . . . .	.10

These rates are quoted to Paleza Ghat and Mokameh Ghat. Prior to 15th December, 1936, the date from which the above rates were quoted this traffic was charged at special rates as shown in the attached copy of this Railway's Special Local Rate Advice No. 8A of 1936, Local Rate Advice No. 4 of 1936 and Local Rate Advice No. 3 of 1935.

(b) Special rates have been quoted locally between certain specific stations. These are approximately based at .20 pie per maund per mile.

(c) With effect from 6th June, 1934, special rates at Owner's Risk have been quoted for through booking of molasses *via* Katihar and for local booking to Katihar West. These rates are calculated on the following basis:—

‡ pie per maund per mile plus 3 pies terminal.

Before the introduction of these rates this traffic used to be charged at special rates based on schedule C/P plus 3 pies terminal which works out as under:—

Distance.	Pie per maund per mile.
1 to 75 miles . . . . .	.25
+76 to 150 miles . . . . .	.17
+151 to 500 miles . . . . .	.14
+501 miles and above . . . . .	.10

(d) Special rates for through booking *via* Mokameh Ghat are calculated as under:—

Distance.	Pie per maund per mile.
1 to 250 miles	$\frac{1}{4}$ th
251 and above miles	$\frac{1}{8}$ th

} plus 7 pies as ferry charges.

These rates were quoted from 1st May, 1934, prior to which date this traffic was charged at special rates based on scale C/P plus 3 pies terminal and 7 pies as ferry charges. The basis of C/P scale is given above.

In case of traffic from factory stations to Howrah we quoted through rates based at scale C/L and miled between the Bengal and North-Western and East Indian Railways. The scale C/L is calculated as follows:—

Distance.	Pie per maund per mile.
1 to 100 miles . . . . .	.38
+101 to 300 miles . . . . .	.22
+301 to 600 miles . . . . .	.13
+601 miles and above . . . . .	.11

(4) *Bagasse.*

We have carried so far no traffic in this commodity but recently special rates were introduced from 17th May, 1937, on the following basis:—

Distance.	Pie per maund per mile.	
1 to 150 miles	·14	} <i>plus 6 pies terminals.</i>
Over 150 miles	·11	

(5) *Limestone.*

This traffic is mostly received from Great Indian Peninsula Railway stations, *e.g.*, Katni, Maihar and Satna, etc., on the Jubbulpore Branch *via* Allahabad City and from Dehri-on-Sone *via* Benares Cantonment. Special rates as shown in this Railway's Cement and Lime Pamphlet No. 1 of 1937 copy enclosed are in force for this traffic. These have been practically in force for the last seven years.

A few stations over this Railway also get their supplies from Sylhet by the river route up to Paleza or Semaria Ghat and then by rail at the C/M scale rates which are calculated as follows:—

Distance.	Pie per maund per mile.	
1 to 75 miles	·38	} <i>plus terminals, etc.</i>
+76 to 300 miles	·20	
+ Above 300 miles	·10	

Prior to 1st April, 1933, Limestone in absence of special rates used to be charged at C/Q scale rates calculated as follows:—

Distance.	Pie per maund per mile.	
1 to 100 miles	·20	} <i>plus terminals, etc.</i>
+101 to 200 miles	·17	
+201 to 500 miles	·14	
+ Above 500 miles	·10	

It might, however, be observed that there was no traffic in this commodity from Sylhet in the past. This traffic is only of a recent origin.

(6) *Manures.*

(i) *Oilcake used for manure.*—This commodity is generally charged at scale C/EE rates (·67 pie per maund per mile) *plus* terminals and transhipment charges subject to conditions Owner's Risk W/272.

(ii) *Chemical Manure.*—Special rates are quoted for this commodity worked out on the following basis:—

For small consignments—

·125 pie per maund per mile *plus 3 pies.*

For wagon load consignments—

·10 pie per maund per mile.

All other kinds of manure are generally charged at C/O scale rates subject to condition Owner's Risk W/200 L. This scale works out as under:—

Distance.	Pie per maund per mile.	
1 to 75 miles	·30	} <i>plus terminals, etc.</i>
+76 to 400 miles	·17	
+ Above 400 miles	·10	

There has not been any alteration in the basis of charge during the last seven years.



सत्यमेव जयते

Statement showing rates per maund for Sugar from Factory Stations on the

From	To					
	Allahabad City.			Barabanki.		
	Prior to 1st July 1932.	From 1st July 1932.	From 15th Decem- ber 1932.	Prior to 1st May 1931.	From 1st May 1931.	From 1st July 1932.
	A. P.	A. P.	A. P.	Rs. A. P.	A. P.	A. P.
Babhnan	9 8	..	9 5	0 2 10	3 1	..
Baitalpur	7 9	..	7 0*	0 7 2	..	6 5*
Balrampur	9 3	..	8 4*	0 2 6	2 9	..
Barhni	10 8	..	9 9*	0 3 8	..	..
Basti	10 1	9 0	..	0 3 4	3 8	4 4
Bhatni	7 2	..	6 5	0 4 11	5 5	7 0
Biswan	8 5	..	7 6*	0 3 0	..	..
Campianganj	9 5	..	..	0 5 0	..	6 3
Captainganj	9 7	..	8 7*	0 5 1	5 7	6 5
Chakia	11 7	9 0	..	0 8 7	9 5	11 6
Chanpatia	13 7	11 0	..	0 8 11	9 10	12 7
Chhitauni	10 8	..	..	0 6 0	..	7 3*
Gauri Bazar	8 0	7 2	..	0 4 11	5 5	6 8
Ghughli	9 11	8 10	..	0 5 4	5 10	6 8
Harinagar	14 4	..	10 5*	1 0 5	..	13 0
Harkhua	9 0	..	8 1	0 9 4	..	8 5
Hasanpur Road . . .	12 8	..	10 1*	0 9 0	..	12 2
Hathua	8 8	..	7 9*	0 6 0	6 7	8 4
Jarwal Road	7 4	..	6 5*	0 1 0	..	1 5
Jhusi	1 4	..	..	..	..	..
Kathkuiyan	10 2	..	9 1*	0 5 6	..	7 2
Khada	10 5	..	9 3*	0 5 10	6 5	7 2
Lakshmiganj	9 9	8 9	..	0 5 3	5 9	6 7

* In force from

† In force from

‡ In force from

Bengal and North-Western Railway to certain Local Stations.

Cawnpore.				Lucknow City.		Sitapur.	
Prior to 1st May 1931.	From 1st May 1931.	From 1st July 1932.	From 10th January 1934.	Prior to 1st July 1932.	From 1st July 1932.	Prior to 1st July 1932.	From 1st July 1932.
Rs. A. P.	A. P.	A. P.	A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
0 4 8	5 10	5 10	..	0 4 10	..	0 5 9	..
0 7 0	..	..	8 6*	0 7 10	..	0 8 9	0 7 10†
0 4 4	4 9	5 5	..	0 4 5	..	0 5 4	0 4 9†
0 5 6	..	..	6 9*	0 5 11	..	0 6 9	0 6 1†
0 4 11	5 5	6 3	..	0 5 6	0 5 0	0 6 5	0 6 8
0 7 2	7 11	9 0	..	0 8 5	0 7 7	0 9 4	0 8 4
0 5 3	..	..	4 8*	0 3 8	..	0 1 9	..
0 6 10	..	8 4	..	0 7 8	0 6 11	0 8 6	0 7 8†
0 6 6	7 2	8 6	..	0 7 9	..	0 8 8	0 7 9†
0 10 8	..	12 9	11 0	0 14 4	..	0 15 2	0 12 5
0 11 0	11 9	13 9	11 11	1 0 4	..	1 1 2	0 13 4
0 7 10	12 1	..	9 4*	0 8 10	0 8 0	0 9 9	0 8 9†
0 6 9	7 5	8 4	..	0 7 8	0 6 11	0 8 6	0 7 8
0 6 8	7 4	8 9	..	0 8 1	0 7 3	0 8 11	0 8 0
0 11 0	..	14 1	..	1 1 1	..	1 1 11	0 13 8†
0 11 8	..	10 2†	..	0 10 0	..	0 10 11	0 9 7†
1 1 0	..	13 3	..	0 15 4	..	1 0 3	0 12 11†
0 8 3	..	10 1	..	0 9 11	..	0 10 9	0 9 6†
0 2 10	..	3 9†	..	0 2 7	..	0 3 6	..
0 5 8	..	..	..	0 6 6	..	0 8 5	..
0 7 3	..	9 2	..	0 8 7	0 8 3	0 9 6	0 8 6†
0 7 0	7 8	9 2	..	0 8 8	0 7 9	0 9 6	0 8 6†
0 6 9	7 5	8 8	..	0 8 0	0 7 2	0 8 10	0 7 11

15th June, 1934.

1st October, 1934.

1st December, 1932.

From	To					
	Allahabad City.			Barabanki.		
	Prior to 1st July 1932.	From 1st July 1932.	From 15th Decem- ber 1932.	Prior to 1st May 1931.	From 1st May 1931.	From 1st July 1932.
	A. P.	A. P.	A. P.	Rs. A. P.	A. P.	A. P.
Lohat Siding . . .	13 3	10 8	..	0 8 11	9 10	12 5
Maharajganj . . .	8 9	7 10	..	0 6 0	6 7	8 5
Mairwa . . .	7 9	7 0	..	0 5 6	6 1	7 6
Majhowlia . . .	13 0	..	10 5	0 8 10	..	12 4
Marhowrah . . .	8 8	7 10	..	0 6 7	7 3	9 6
Motihari . . .	12 4	11 7	9 8	0 8 9	9 8	11 11
Motipur . . .	11 2	..	9 9*	0 8 6	..	11 2
Munderwa . . .	9 9	..	8 9	0 3 7	..	4 8
Muzaffarpur . . .	10 7	7 11	..	0 8 5	9 3	10 10
Narkatiaganj . . .	14 1	..	11 5	0 8 11	..	12 10
Nawabganj (Gonda) .	8 6	..	8 3	0 2 8	..	..
Nirmali . . .	14 1	..	11 9*	0 9 1	..	12 10
Pachrukhi . . .	8 5	7 7	..	0 6 0	6 7	8 1
Padrauna . . .	10 3	9 1	..	0 5 6	6 1	7 0
Pharenda . . .	9 7	..	8 7	0 4 10	..	6 1
Pipraich . . .	9 1	..	8 2	0 4 9	5 3	6 0
Ramkola . . .	9 11	..	8 11	0 5 3	..	6 8
Riga . . .	14 2	..	11 10*	0 8 9	..	12 11*
Sagauli . . .	12 9	..	10 11*	0 8 10	..	12 2
Sakri . . .	12 11	..	11 0*	0 8 9	..	12 3
Samastipur . . .	11 9	10 2	9 1	0 8 6	9 4	11 7
Sardarnagar . . .	8 3	7 5	..	0 4 10	5 4	6 0
Sasamusa . . .	9 1	..	8 2	0 9 1	..	8 1
Savan . . .	8 3	7 5	..	0 6 0	6 7	8 0

*In force from

†In force from

‡In force from

Cawnpore.				Lucknow City.		Sitapur.	
Prior to 1st May 1931.	From 1st May 1931.	From 1st July 1932.	From 10th January 1934.	Prior to 1st July 1932.	From 1st July 1932.	Prior to 1st July 1932.	From 1st July 1932.
Rs. A. P.	A. P.	A. P.	A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	A. P.
0 10 10	11 11	13 6	11 9	0 15 11	..	1 0 10	13 2
0 8 3	9 1	10 2	..	0 10 0	0 9 0	0 10 11	9 7
0 7 6	8 3	9 5	..	0 9 0	0 8 2	0 9 11	8 11
0 10 11	..	13 5†	11 8	0 15 9	..	1 0 7	13 1†
0 8 11	9 10	11 2	..	0 11 5	0 9 11	0 12 3	10 7
0 10 10	11 11	13 1	11 4	0 15 0	..	0 15 11	12 9†
0 10 7	..	..	10 9	0 13 10	..	0 14 9	12 2†
0 5 3	..	6 9†	..	0 5 10	5 3	0 6 8	6 0†
0 10 6	11 7	12 3	10 6	0 13 3	..	0 14 2	11 9
0 11 0	..	13 11	12 2	1 0 9	..	1 1 8	13 7†
0 4 5	..	..	..	0 3 9	..	0 5 7	4 11†
0 10 11	..	13 11	..	1 0 9	..	1 1 8	..
0 8 3	9 1	9 11	..	0 9 8	8 9	0 10 7	9 4
0 7 0	7 8	9 0	..	0 8 5	7 7	0 9 4	8 4
0 6 9	..	8 3	..	0 7 6	6 9	0 8 4	7 6†
0 6 5	7 1	8 1	..	0 7 4	6 7	0 8 3	7 4
0 6 9	..	8 9	..	0 8 1	7 4	0 9 0	8 11
0 10 11	..	14 0	12 2	1 0 10	..	1 1 9	13 7†
0 10 10	..	13 4	11 7	0 15 5	..	1 0 4	12 11†
0 10 9	..	13 5	..	0 15 8	..	1 0 6	13 0†
0 10 6	11 7	..	11 0	0 14 4	..	0 15 3	12 5
0 6 6	7 2	8 1	..	0 7 4	6 7	0 8 3	7 4
0 11 4	..	9 11†	..	0 9 8	..	0 10 7	9 4†
0 8 3	9 1	9 9	..	0 9 6	8 7	0 10 5	9 2

15th June, 1934.

1st October, 1934.

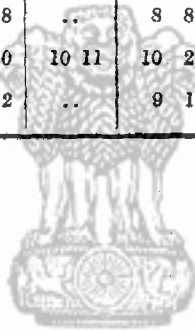
1st December, 1932.

From	To					
	Allahabad City.			Barabanki.		
	Prior to 1st July 1932.	From 1st July 1932.	From 15th Decem- ber 1932.	Prior to 1st May 1931.	From 1st May 1931.	From 1st July 1932.
	A. P.	A. P.	A. P.	Rs. A. P.	A. P.	A. P.
Semapur . . .	15 0	..	12 3*	0 10 4	..	13 3*
Shahganj . . .	..	..	..	..	..	..
Sidhwalia . . .	9 7	..	8 7	0 10 0	..	8 11
Siswa Bazar . . .	10 2	9 0	..	0 5 7	..	6 11
Sitalpur . . .	8 11	..	..	0 6 11	..	9 7*
Tahsildeoria . . .	7 8	..	6 10	0 4 11	5 5	6 7
Tamkahi Road . . .	9 8	..	8 8	0 5 9	6 4	7 7
Tarsarai . . .	12 10	10 11	10 2	0 8 8	9 6	12 2
Walterganj . . .	10 2	..	9 1	0 3 3	..	4 3

*In force from

†In force from

‡In force from



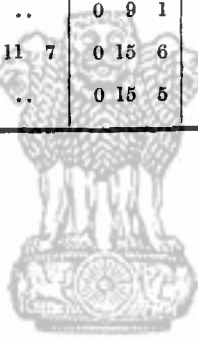
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Cawnpore.				Lucknow City.		Sitapur.	
Prior to 1st May 1931.	From 1st May 1931.	From 1st July 1932.	From 10th January 1934.	Prior to 1st July 1932.	From 1st July 1932.	Prior to 1st July 1932.	From 1st July 1932.
Rs. A. P.	A. P.	A. P.	A. P.	Rs. A. P.	A. P.	Rs. A. P.	A. P.
0 13 4	..	..	12 5*	0 15 3	..	1 2 6	14 0†
0 4 8	..	..	..	..	..	0 7 10	..
0 12 3	..	10 7‡	..	0 10 7	..	0 11 6	10 0†
0 6 9	..	8 11	..	0 8 4	7 6	0 9 2	8 3
0 9 11	..	..	11 3*	0 11 7	..	0 12 5	10 8†
0 7 0	7 8	8 8	..	0 8 0	..	0 8 11	8 0
0 7 9	8 6	9 6	..	0 9 1	8 3	0 10 0	8 11
0 10 8	11 9	13 4	11 7	0 15 6	..	1 0 4	12 11
0 4 11	..	6 4‡	..	0 15 5	4 10	0 6 3	5 7

15th June 1934.

1st October 1934.

1st December 1932.



सत्यमेव जयते

Statement showing rates per maund for Sugar to viâ Mokameh Ghat (for traffic to Howrah).

Stations From	Distance from Semaria Ghat.	Prior to 18th August 1932.	From 18th August 1932.	From 1st Sep- tember 1933.	From 8th July 1935.	From 10th August 1936.	From 1st March 1937.
	Miles.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.
Babhnan . .	267	10 11	10 11	8 10	7 10	7 10	9 3
Baitalpur . .	182	7 11	..	6 11	5 9	5 9	6 6
Balrampur . .	321	12 10	..	10 7	8 9	8 9	10 9
Barhni . .	278	11 4	..	9 6	8 1	8 1	9 6
Basti . .	248	10 3	10 3	8 8	6 11	6 11	8 4
Bhatni . .	165	7 4	7 4	6 6	5 6	5 6	6 1
Biswan . .	381	14 3	..	8 10	8 8	8 8	12 2
Campierganj . .	229	9 7	..	8 2	7 0	7 0	8 1
Captainganj . .	214	9 1	..	7 10	7 2	7 2	7 10
Chakia . .	100	5 1	5 1	4 10	..	4 10	5 1
Chanpatia . .	157	7 1	7 1	6 4	..	5 11	6 7
Ohhitauni . .	245	10 2	..	..	8 0	8 0	8 10
Gauri Bazar . .	187	8 2	8 2	7 1	5 11	5 11	6 9
Ghughli . .	223	9 5	9 5	8 1	7 6	7 6	8 2
Harinagar . .	179	7 10	..	6 10	..	6 2	7 1
Harkhua . .	155	7 0	7 0	6 3	5 5	5 5	5 11
Hasanpur Road . .	66	3 11	..	..	..	3 11	3 11
Hathwa . .	146	6 8	..	6 0	5 2	5 2	5 7
Jarwal Road . .	332	13 2	13 2	9 0	8 5	8 5	8 5
Jhusi . .	296	11 11	..	7 6	6 9	7 1	7 1
Kathkuiyan . .	189	8 2	..	..	6 7	6 7	7 1
Khada . .	239	9 11	..	8 5	7 8	7 8	8 7
Lakshmiganj . .	207	8 10	8 10	7 7	7 0	7 0	7 8
Lohat Siding . .	82	4 5	4 5	4 4	..	4 4	4 5
Maharajganj . .	128	6 1	6 1	5 7	5 0	5 0	5 3
Mairwa . .	148	6 9	6 9	6 1	5 3	5 3	5 8

Stations From	Distance from Semaria Ghat.	Prior to 18th August 1932.	From 18th August 1932.	From 1st Sep- tember 1933.	From 8th July 1935.	From 10th August 1936.	From 1st March 1937.
	Miles.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.
Majhowlia . .	141	6 6	6 6	5 10	..	5 8	6 2
Marhowrah . .	113	5 6	5 6	5 1	4 5	4 5	4 8
Motihari . .	120	5 9	5 9	5 4	..	5 4	5 8
Motipur . .	86	4 7	..	4 5	..	4 5	4 7
Munderwa . .	239	9 11	9 11	8 5	6 10	6 10	8 2
Muzaffarpur . .	70	4 0	4 0	4 0	..	4 0	4 0
Narkatiaganj . .	169	7 6	7 6	6 7	..	6 1	6 11
Nawabganj (Gonda)	299	12 1	12 1	8 11	8 1	8 1	10 0
Nirmali . .	105	5 3	..	4 11	..	..	5 1
Pachrukhi . .	130	6 2	6 2	5 7	4 11	4 11	5 2
Padrauna . .	194	8 4	8 4	7 3	6 9	6 9	7 4
Pharenda . .	234	9 0	9 9	8 4	7 4	7 4	8 4
Pipraich . .	220	9 3	9 3	7 11	6 8	6 8	7 8
Ramkola . .	204	8 9	8 9	7 7	7 0	7 0	7 7
Riga . .	109	5 5	..	5 1	..	5 1	5 5
Sagauli . .	133	6 3	..	5 8	..	5 7	6 1
Sakri . .	73	4 2	..	4 2	..	4 2	4 2
Samastipur . .	38	2 11	2 11	2 11	..	2 11	2 11
Sardarnagar . .	197	8 6	8 6	7 4	6 0	6 0	6 11
Sasamusa . .	159	7 2	7 2	6 5	5 9	5 9	6 2
Savan . .	135	6 4	6 4	5 9	5 1	5 1	5 5
Sidhwalia . .	142	6 7	6 7	5 11	5 0	5 0	5 5
Siswa Bazar . .	230	9 8	9 8	8 3	7 7	7 7	8 4
Sitalpur . .	76	4 3	..	4 2	3 11	3 11	3 11
Tahsildeoria . .	178	7 10	7 10	6 10	5 8	5 8	6 5
Tamkahi Road . .	175	7 9	7 9	6 10	6 2	6 2	6 8
Tarsarai . .	69	4 0	4 0	4 0	..	4 0	4 0
Walterganj . .	252	10 5	10 5	8 9	7 3	7 3	9 3

Statement showing rates per annum for Sugar from Factory Stations on the Bengal and North-Western Railway to Certain Junction Stations for Traffic to Ports.

Stations From	Via Allahabad City (for traffic to Bombay).				Via Cawnpore (for traffic to Karachi).				Via Mokameh Ghat (for traffic to Madras, Vizagapatam, Coanada, Calicut, Tellichery, Cannanore, Mangalore, Ernakulam, and Tuticoria).				REMARKS.
	Prior to 1st July 1932.	A. P.	From 1st July 1932.	A. P.	From 10th January 1934.	A. P.	From 15th January 1935.	A. P.	Prior to 10th January 1934.	A. P.	From 10th January 1934.	From 1st February 1935.	
Bathman	9 5	9 5†	4 5	4 9	5 10	3 11	3 11	3 11	10 11	8 4	5 6	5 6	
Baitalpur	7 6	..	4 0	4 0	9 0	5 9	5 0	5 0	7 11	6 5	4 6	4 6	
Balrampur	9 0	..	5 10	5 3	5 5	3 11	3 11	3 11	12 10	10 2	6 0	6 0	
Barhai	10 5	..	5 10	5 3	7 1	4 4	4 0	4 0	11 4	9 0	5 3	5 3	
Basti	9 10	9 0	5 5	4 3	6 5	4 0	4 0	4 0	10 3	8 2	5 0	5 0	
Bhatni	6 11	6 5†	4 3	4 0	9 0	6 3	5 0	5 0	7 4	6 0	4 3	4 3	
Biswan	8 2	..	..	..	4 9	..	..	..	14 3	..	..	..
Campienganj	9 2	..	..	4 6	8 4	..	5 6	5 6	9 7	..	5 0	5 0	
Captainganj	9 4	..	5 2	4 6	8 6	5 4	5 4	5 4	9 1	7 4	4 6	4 6	
Chakia	11 4	9 0†	6 0	5 3	12 9	7 3	6 0	6 0	5 1	4 4	4 4	4 0	

Chandpatia ..	13 4	11 0	6 7	6 0	13 9	7 2	6 3	7 1	5 10	5 0
Chhitauni ..	10 5	..	5 7	5 6	10 0	6 6	5 9	10 2	8 2	5 6
Gauri Bazar ..	7 9	7 2*	4 6	4 0	8 4	5 6	5 0	8 2	6 7	4 6
Ghughli ..	9 8	8 10	5 4	4 9	8 9	5 9	5 9	9 5	7 7	4 6
Harinagar ..	14 1	..	6 10	6 6	14 1	7 11	6 6	7 10	6 4	5 6
Harkhua ..	8 9	8 1†	4 11	4 6	10 2	6 8	5 3	7 0	5 9	3 9
Hasanpur Road ..	12 5	..	..	5 0	13 3	..	6 6	3 11	..	3 5
Hathua ..	8 5	..	4 10	4 6	10 1	6 9	5 3	6 8	5 6	3 9
Jarwal Road ..	7 1	7 1†	..	..	3 9	..	..	13 2	8 6	6 6
Jhusi ..	1 1	..	..	1 1	..	..	..	11 11	..	6 3
Kathkuniyan ..	9 11	..	5 5	4 8	9 2	6 4	5 6	8 2	7 11	4 0
Khada ..	10 2	..	5 6	5 3	9 2	6 3	5 9	9 11	7 11	5 0
Lehmaniganj ..	9 6	8 9	5 3	4 7	8 8	5 9	5 6	8 10	7 4	4 3
Lohat Siding ..	13 0	10 8	6 6	5 6	13 6	7 7	6 3	4 5	3 10	13 10
Maharajganj ..	8 6	7 10	4 10	..	10 2	6 11	..	6 1	5 1	5 1
Mairwa ..	7 6	7 0*	4 5	4 3	9 5	6 6	5 3	6 9	5 7	4 0
Majhowlia ..	12 9	10 5†	6 5	5 9	13 5	7 7	6 3	6 6	5 4	4 0
Marhowrah ..	8 5	7 10*	4 10	4 6	11 2	7 6	5 6	5 6	4 7	3 6

* In force from 1st August, 1932.

† In force from 15th December, 1934.

Stations From	Via Allahabad City (for traffic to Bombay).				Via Cawnpore (for traffic to Karachi).			Via Mokameh Ghat (for traffic to Madras, Vizagapatam, Cocanada, Calicut, Tellichery, Cannanore, Mangalore, Ernaculam and Tuticorin).			REMARKS.
	Prior to 1st July 1932.	From 1st July 1932.	From 10th January 1934.	From 15th January 1935.	Prior to 10th January 1934.	From 10th January 1934.	From 10th January 1935.	Prior to 10th January 1934.	From 10th January 1934.	From 1st February 1935.	
	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	A. P.	
Motibari	12 1	9 8†	6 2	5 6	13 1	7 6	6 0	5 9	4 10	4 0	
Motipur	10 11	..	5 10	5 0	12 6	7 1	5 9	4 7	3 11	3 11	
Munderwa	9 6	8 9†	5 3	4 3	6 9	4 3	4 3	9 11	7 11	5 0	
Muzaffarpur	10 4	7 11	5 7	4 9	12 3	7 0	5 9	4 0	3 6	3 6	
Nerkatiaganj	13 10	11 5†	6 9	6 3	13 11	7 10	6 6	7 6	6 1	5 3	
Nawabganj (Gonda)	8 3	8 3†	..	5 0	..	..	3 11	12 1	8 5	5 9	
Nirmali	13 10	..	..	..	13 11	..	..	5 3	..	5 4	
Pachrukhi	8 2	7 7	4 9	4 3	9 11	6 11	5 3	6 2	5 1	3 9	
Padrauna	10 0	9 1	5 5	4 8	9 0	6 3	5 5	8 4	6 9	4 0	
Pharenda	9 4	8 7†	5 2	5 0	8 3	5 5	5 5	9 9	7 10	5 0	
Pipsich	8 10	8 2†	5 0	4 3	8 1	5 1	5 1	9 2	7 5	4 6	

Ramkola	9 8	8 11†	5 4	4 7	8 9	6 0	5 6	8 9	7 1	4 3
Riza	13 11	..	6 9	5 9	14 0	7 10	6 3	5 5	4 7	4 7
Sagauli	12 6	..	6 4	5 9	13 4	7 6	6 3	6 3	5 2	4 0
Sakri	12 8	..	6 5	5 3	13 5	7 7	6 0	4 2	3 8	3 8
Samastipur	11 6	10 2*	6 0	4 9	12 10	7 3	6 0	2 11	2 5	2 5
Sardarnagar	8 0	7 5	4 8	4 0	8 1	5 1	5 0	8 6	6 10	4 6
Sasamusa	8 10	8 2†	5 0	4 6	9 11	6 6	5 3	7 2	5 11	3 9
Savan	8 0	7 5	4 8	4 3	9 9	6 11	5 3	6 4	5 3	3 9
Sidhwalia	9 4	8 7†	5 2	4 6	10 7	6 9	5 3	6 7	5 5	3 6
Siswa Bazar	9 11	9 0	5 5	5 0	8 11	6 0	5 9	9 8	7 9	4 9
Sitalpur	8 8	..	..	4 6	11 3	..	5 6	4 3	..	3 6
Tahsildeoria	7 5	6 10†	4 5	4 0	8 8	6 0	5 0	7 10	6 4	4 3
Tamkoti Road	9 5	8 8†	5 3	4 9	9 6	6 5	5 3	7 9	6 4	4 0
Tarsarai	12 7	10 11*	6 4	5 0	13 4	7 6	6 0	4 0	3 6	3 6
Walterganj	9 11	9 1†	5 5	4 6	6 4	4 0	4 0	10 5	8 3	5 3

* In force from 1st August, 1932.

† In force from 15th December, 1934.

Statement showing the total income derived from "Sugarcane", "Sugar" and "Molasses".

Year ending.	Commodities.			Remarks.
	Sugarcane.	Sugar.	Molasses.	
March—	Rs.	Rs.	Rs.	
1931	4,32,517	12,42,165	*	
1932	6,15,696	15,37,712	*	
1933	8,76,203	19,08,285	*	
1934	11,98,812	33,01,285	*	
1935	18,15,773	28,31,099	2,58,635	
1936	15,50,772	28,48,385	3,44,509	
1937	13,08,880	40,16,589	5,91,045	

*Not available as the figures on account of molasses traffic were not separately recorded in the years 1931, 1932, 1933 & 1934.

(8) *Letter, dated the 25th August, 1937, from the General Traffic Manager, Bombay, Baroda and Central India Railway Company, Bombay.*

SUBJECT:—*Rates for Sugar, etc.*

With reference to your letter, dated the 18th May, last, to the Secretary, Railway Board, I beg to enclose a statement showing the bases on which the present railway freight rates are calculated over this railway for the commodities mentioned in item (a) of your letter. In regard to Baggasse, however, this commodity is not at present classified in the Indian Railways' General classification of goods and it would appear that there is no traffic in it on this Railway.

As regards item (b), the following are the gross earnings of this railway from sugar for each year since 1930-31. Figures for Molasses and sugarcane are not available as separate statistics of these commodities are not maintained by this Railway:—

	Tons.	Rs.
1930-31	201,777	33,49,496
1931-32	149,569	20,80,297
1932-33	122,581	15,34,863
1933-34	136,567	18,05,015
1934-35	129,573	15,75,463
1935-36	140,756	18,01,635
1936-37	211,637	31,27,384

A copy of this Railway's Goods Tariff, Part I, No. 10, is being sent you by separate post and attention is drawn to the special rates for sugar printed at pages 605, 609, 626, 714 to 726, 767 and 768 thereof.

20 A

Enclosure.

Statement showing the bases on which present railway freights are calculated over the Bombay, Baroda and Central India Railway.

Commodity.	Period.		Classified Rate.		Bases of charge over Bombay, Baroda and Central India Railway.
	From	To	Class.	Pie per maund per mile.	
Sugarcane .	1930	1937	1	0.38	(1) In through booking 0.250 pie per maund per mile. (2) In local booking— As. 6-6 per mile per Broad Gauge wagon plus As. 5 per wagon terminal subject to a minimum charge of Rs. 20 As. 3-9 per mile per Meter Gauge wagon plus As. 3 per wagon terminal subject to a minimum charge of Rs. 10. NOTE.—Reduced special rates are also in force for sugarcane to Jaora and Manpur Nagaria from certain stations.
Sugar	1930	31st March 1937.	2	0.42	
	1st April 1937	—	2A	0.46	
	1930	1933	—	—	.38 pie per maund per mile.
	1934	—	—	—	Miles. Pie per maund per mile. 1—300 .. 0.420 +301—400 .. 0.300 +401—500 .. 0.200 +501—600 .. 0.125 +601—700 .. 0.115 +Over 700 .. 0.100 NOTE.—A large number of reduced special rates are also in force for sugar from producing stations in United Provinces, Bihar and Punjab to stations on the Bombay, Baroda and Central India Railway.

Commodity.	Period.		Classified Rate.		Bases of charge over Bombay, Baroda and Central India Railway.
	From	To	Class.	Pie per maund per mile.	
Molasses .	1930	30th September 1935.	2	0.42	
	1st October 1935.	—	1	0.38	
	1930	31st July 1936.	—	—	Miles. Pie per maund per mile. 1—250 .. 0.333 + 251—500 .. 0.200 + 501—700 .. 0.130 + Over 700 .. 0.100
	1st August 1936.	—	..	..	1— 75 .. 0.380 + 76—300 .. 0.200 + Over 300 .. 0.100
					NOTE.—Reduced special rates are also in force for molasses in tins and in tank wagons between certain stations.
Limestone .	1930	1937	1	0.38	Miles. Pie per maund per mile. 1— 75 .. 0.300 + 76—400 .. 0.170 + Over 400 .. 0.100
Manures .	1930	30th April 1936.	1	0.38	Any distance 0.10 pie per maund per mile.
	1st May 1936.	—	..	..	Any distance 0.140 pie per maund per mile.

(9) Letter, dated the 24th/26th August, 1937, from the Chief Traffic Manager, Great Indian Peninsula Railway, Bombay.

RE:—Rates for sugar, etc.

With reference to your letter dated the 18th May, 1937, to the Secretary, Railway Board, Simla, I am directed by the Agent of this Railway to supply you with information relating to points (a) and (b) of your letter.

2. I beg to enclose herewith a statement showing the basis on which present railway freights are calculated over the Great Indian Peninsula Railway for—

- (1) Sugarcane,
- (2) Sugar,

- (3) Molasses,
- (4) Limestone,
- (5) Manures,

and indicating the changes, if any, that have taken place in the basis of charge during the last seven years.

3. I beg to state further that for all these commodities certain reduced station-to-station rates are also in force which have been quoted according to the circumstances of each particular case. In regard to "Bagasse", this commodity is not classified in the General classification of goods and there is no traffic over this railway. It is not, therefore, possible to give the basis of charge. A decision on this point would depend largely on the uses to which it is put, about which we have no information.

4. I enclose herewith a statement showing the total income derived by the Great Indian Peninsula Railway from the transport of sugar per year since 1930-31. It is regretted that separate figures of earnings under "Sugarcane" and "Molasses" are not available as such figures are not maintained on this railway.

Enclosure.

STATEMENT No. 1.

Statement showing the basis on which present Railway freights are calculated over the Great Indian Peninsula Railway.

Name of Commodity.	Period		Basis.	Pie per maund per mile.
	From	To		
Sugar cane	1st April 1930.	to date	For any distance.	0.380
Sugar	1st April 1930.	31st January 1931.	For any distance.	0.380
	1st February 1931.	to date.	For any distance.	0.420
	1st April 1930.	31st May 1931.	Up to 100 miles. + 101 to 300 miles. + 301 to 600 miles. + 601 and over.	0.380 0.200 0.130 0.110
Molasses	1st June 1931.	to date.	Up to 150 miles. + 151 to 250 miles. + 251 to 500 miles. + 501 to 700 miles. + 701 and over.	0.380 0.333 0.200 0.130 0.100
	1st April 1930.	to date.	Up to 75 miles. + 76 to 400 miles. + 401 and over.	0.300 0.170 0.100
	1st April 1930.	30th April 1936.	For any distance.	0.100
	1st May 1936.	up to date.	For any distance.	0.140
Limestone	1st April 1930.	to date.	Up to 75 miles. + 76 to 400 miles. + 401 and over.	0.300 0.170 0.100
Manures	1st April 1930.	30th April 1936.	For any distance.	0.100
	1st May 1936.	up to date.	For any distance.	0.140

STATEMENT No. 2.

Statement showing the total income derived by the Great Indian Peninsula Railway from the transport of sugar for each year since 1930-31.

Period year ending.	Sugar.
	Rs.
31st March 1931	22,31,085
31st March 1932	19,27,747
31st March 1933	18,61,626
31st March 1934	23,68,706
31st March 1935	24,44,826
31st March 1936	26,24,027
31st March 1937	36,97,739

(10) Letter, dated the 4th September, 1937, from the Agent, North Western Railway, Lahore.

RATES FOR DIFFERENT ARTICLES.

With reference to your letter, dated the 18th May, 1937, to the Secretary, Railway Board, Simla, a copy of which has been forwarded to this Railway to supply the information asked for in items (a) and (b) of your letter I beg to enclose herewith two statements for 7 years from 1930-31 to 1936-37 showing:—

- (a) the basis on which freight rates are calculated over the North Western Railway for sugarcane, sugar, molasses, bagasse, limestone and manures.
- (b) the income derived from the transport of sugarcane, sugar and molasses.

The figures of income derived from sugarcane traffic for the years 1930-31 to 1932-33 are not available.

Enclosure.

Commodity.	Rates in force over North Western Railway.	Rate in force at present.
<p>Sugarcane classified 1st class (0.38 pie per maund per mile <i>plus</i> terminals and short distance charge) at Railway Risk.</p>	<p><i>1st April 1930 to 14th January 1932.</i></p> <p>Schedule C/J O. R. W./300, L. basis varying from 0.380 to 0.100 pie per maund per mile <i>plus</i> terminals and short distance charge.</p> <p><i>15th January 1932 to 31st August 1937.</i></p> <p>(a) Schedule C/N W/300, Owner's Risk, L. basis varying from 0.333 to 0.100 pie per maund per mile <i>plus</i> terminals and short distance charge.</p> <p>(b) The following changes were also made during this period:—</p> <p>(i) Special rates per maund based on Schedule C/N rate less short distance charge were quoted to sugar factory stations from stations within a radius of 75 miles during the period 9th September 1932 to 31st August 1934.</p> <p>(ii) Special wagon rates based on Schedule C/N rate less short distance charge were quoted during 1st September 1934 to 31st October 1935 in supersession of rates referred to in item (i) of 300 maunds per wagon which represented reduction of 18 to 21 per cent.</p> <p>(iii) The special wagon rates referred to in item (ii) were further reduced from 1st November 1935.</p>	<p><i>31st August 1937.</i></p> <p>(a) Schedule C/N W/300 Owner's Risk, L. basis varying from 0.333 to 0.100 pie per maund per mile <i>plus</i> terminals and short distance charge.</p> <p>(b) Special rates in bookings to sugar factory stations appear on page 633 of our Goods Tariff, Part I (No. 53).</p>

Commodity.	Rates in force over North Western Railway.	Rate in force at present.
Sugar classified 2.A. class 10.46 pie per maund per mile <i>plus</i> terminals and short distance charge) at Railway Risk. Prior to 1st April 1937, sugar was classified 2nd class (0.42 pie per mile <i>plus</i> terminals and short distance charge).	<p><i>1st April 1930 to 14th April 1931.</i></p> <p>1st class (0.38 pie per maund per mile <i>plus</i> terminals and short distance charge) at Owner's Risk.</p> <p><i>15th April 1931 to 31st December 1933.</i></p> <p>1st class Owner Risk D/750 D. R. in booking from Karachi only.</p> <p><i>15th April 1931 to 31st March 1937.</i></p> <p>(a) 1st class Owner Risk when booked from Karachi or Kiamari <i>via</i> Hyderabad to Nana and stations North of Nana including station Nasrabad to Bhiwani, etc.</p> <p>(b) The following changes were also made during this period :—</p> <p>(i) Special rates from Karachi to station on North Western Railway were quoted during the period 15th April 1931 to 31st May 1935.</p> <p>(ii) Special rates from sugar factory stations to Karachi and stations in Sind were quoted from 1st December 1933 to 20th January 1935.</p>	<p>(a) Rate—2nd class at Railway Risk (0.42 pie per maund per mile <i>plus</i> terminals and short distance charge).</p> <p>(b) Special rates quoted appear on pages 451, 452, 613 to 632 of our Goods Tariff, Part I (No. 53).</p>

(iii) Special rates from sugar factory stations to Karachi and stations in Sind referred to in items (ii) were further reduced from 2nd January 1935.

1st April 1930 to 31st May 1932.

Molasses classified 2nd class (0.42 pie per maund per mile *plus* terminals and short distance charge) at Railway Risk,

Schedule C. L., Owner's Risk, W/270; L. basis varying from 0.380 to 0.110 pie per maund per mile *plus* terminals and short distance charge.

1st June 1932 to 25th June 1933.

Schedule C/J W/270/Owner's Risk, L. basis varying from 0.380 to 0.100 pie per maund per mile *plus* terminals and short distance charge.

26th June 1933 to 9th May 1934.

Schedule C/N W/270, Owner's Risk, L., when in tins, casks or drums C. C., O. R., L., when in tank wagons basis varying from 0.333 to 0.100 pie per maund per mile *plus* terminals and short distance charge.

10th May 1934 to 31st August 1937.

(a) Schedule CB/CK at Railway Risk basis varying from 0.333 to 0.115 pie per maund per mile *plus* terminals and short distance charge.

(b) Schedule CR rate (i) W/270 Owner's Risk, L., when in tins, casks or drums (ii) CC, Owner's Risk L., when in tank wagons basis varying from 0.140 to 0.110 pie per maund per mile *plus* terminals and short distance charge.

(a) Schedule CB/CK at Railway Risk basis varying from 0.333 to 0.115 pie per maund per mile *plus* terminals and short distance charge.

(b) Schedule CR rate (i) W/270, Owner's Risk, L., when in tins, casks or drums (ii) C. C., O. R., L., when in tank wagons basis varying from 0.140 to 0.110 pie per maund per mile *plus* terminals and short distance charges.

Commodity.	Rates in force over North Western Railway.	Rates in force at present.
<p>Bagasse charged as Waste refuse classified :—</p> <p>(i) 4 Railway Risk (0.62 pie per maund per mile).</p> <p>(ii) W./200 Broad Gauge, W./100 Metre Gauge, 2 A. Railway Risk (0.46 pie per maund) 2 Owner's Risk (0.42 pie per maund). Prior to 1st April 1936, 3 Railway Risk (0.58 pie per maund per mile) 2 Owner's Risk (0.42 pie per maund per mile) <i>plus</i> terminal and short distance charges.</p>	<p><i>1st April 1930 to 31st August 1937.</i></p> <p>(i) Classified rates applied</p> <p>(ii) Special rates from Daurala and Rohana Kalan to Saharanpur quoted from 15th July 1936.</p>	<p>(a) 4 Railway Risk (0.62 pie per maund per mile <i>plus</i> terminals and short distance charges).</p> <p>(b) When in wagon loads W./200 Broad Gauge, W./100 Metre Gauge, 2 A. Railway Risk (0.46 pie per maund per mile <i>plus</i> terminal, and short distance charge) 2 Owner's Risk (0.42 pie per maund per mile <i>plus</i> terminals and short distance charges).</p> <p>(c) Special rates quoted appear on page 640 of our Goods Tariff, Part I (No. 53).</p>
<p>Limestone classified 1st class (0.38 pie per maund per mile <i>plus</i> terminals and short distance charges) at Railway Risk.</p>	<p><i>1st April 1930 to 31st August 1937.</i></p> <p>Schedule C./Q., Owner's Risk, C. C., L., basis varying from 0.200 to 0.100 pie per maund per mile <i>plus</i> terminals and short distance charges.</p> <p>Special rates from lime booking stations to sugar factory stations quoted from 24th October 1934.</p>	<p>(a) Schedule C./Q., Owner's Risk, C. C., L., basis varying from 0.200 to 0.100 pie per maund per mile <i>plus</i> terminals and short distance charges.</p> <p>(b) Special rates quoted appear on pages 585 to 588 of our Goods Tariff, Part I (No. 53).</p>

1st April 1930 to 31st March 1936.		
(a) Schedule C. B./C. K. at Owner's Risk basis varying from 0.333 to 0.115 pie per maund per mile <i>plus</i> terminals and short distance charges.	(a) Schedule C. B./C. K. at Owner's Risk basis varying from 0.333 to 0.115 pie per maund per mile <i>plus</i> terminals and short distance charges.	Manures of all kinds including chemical manures N. O. C. classified 1st class (0.38 pie per maund per mile <i>plus</i> terminals and short distance charges) at Railway Risk.
(b) Schedule C. R., W./400 Broad Gauge, W./300 Narrow Gauge, Owner's Risk, L. basis varying from 0.140 to 0.110 pie per maund per mile <i>plus</i> terminals and short distance charges.	(b) Schedule C./F. F. at Owner's Risk, W./270 Broad Gauge, W./160 Narrow Gauge, L. basis 0.100 pie per maund per mile <i>plus</i> terminals and short distance charges.	
1st April 1936 to 31st March 1937.		
(a) Schedule C. B./C. K. at Owner's Risk.	(a) Schedule C. B./C. K. at Owner's Risk.	
(b) Schedule C./F. at Owner's Risk, W./400 Broad Gauge, W./300 Narrow Gauge, L. basis 0.140 pie per maund per mile <i>plus</i> terminals and short distance charges.	(b) Schedule C./F. at Owner's Risk, W./400 Broad Gauge, W./300 Narrow Gauge, L. basis 0.140 pie per maund per mile <i>plus</i> terminals and short distance charges.	
1st April 1937 to 31st August 1937.		
(a) Schedule C. B./C. K. at Owner's Risk.	(a) Schedule C. B./C. K. at Owner's Risk.	
(b) Schedule C. R., W./400 Broad Gauge, W./300 Narrow Gauge, Owner's Risk, L. basis varying from 0.140 to 0.110 pie per maund per mile <i>plus</i> terminals and short distance charges.	(b) Schedule C. R., W./400 Broad Gauge, W./300 Narrow Gauge, Owner's Risk, L. basis varying from 0.140 to 0.110 pie per maund per mile <i>plus</i> terminals and short distance charges.	

NOTES.—(1) The Symbols use above have the following significance.

B. G. Broad Gauge.

M. G. Metre Gauge.

N. G. Narrow Gauge.

O. R. The rate applies at Owner's Risk.

R. R. The rate applies at Railway Risk.

N. O. C. Not otherwise classified.

C. C. Charges will be made on carrying capacity of wagon used.

L. Loading and unloading to be done by owner.

D. Followed by a figure indicates the distance in miles to which the rate applies.

DR. Differential rule as to distance applies.

W. Followed by figures, indicates the minimum weight in maunds per 4-wheeled wagon to which the rate applies, ϵg , W./300 means that the rate applies to a minimum wagon load of 300 maunds per 4-wheeled wagon. 450 maunds per 6-wheeled wagon and 600 maunds per bogie wagon. Should wagons of a lower carrying capacity than the minimum weight specified be used, charge will be made on the carrying capacity of such wagons.

(2) The short distance charge in force over N. W. Railway is 3 pies per maund on all goods traffic booked for distances less than 75 miles.

(3) The following terminal charges are levied over the N. W. Railway in addition to the mileage rates :—

	Prior to 1st April 1936.		From 1st April 1936.	
	Local Bookings.	Through Bookings.	Local Bookings.	Through Bookings.
	Pies per maund.	Pies per maund.	Pies per maund.	Pies per maund.
(a) On goods charged at class rates	6	3	8	4
(b) On goods charged at schedules C. F., C. F. F., C. N., C. Q., and C. R. rates.	2	1	4	2
(c) On goods charged at schedules C. B., C. K., C. J., C. L.	6	3	8	4

Statement showing earnings derived from the transport of (1) Sugarcane, (2) Sugar and (3) Molasses during the following years:—

Years.	Sugarcane received at sugar factory stations only.	Sugar refined and unrefined.	Molasses in bulk.	Gur, jagree and molasses, etc. not in bulk.
	Rs.	Rs.	Rs.	Rs.
1930-31 .	Not available.	76,68,600	4,400	14,78,400
1931-32 .	Do.	53,25,400	12,000	19,18,700
1932-33 .	Do.	38,75,200	13,900	26,93,600
1933-34 .	1,50,570	39,52,200	5,300	20,32,800
1934-35 .	2,00,434	35,73,900	37,800	19,98,500
1935-36 .	3,56,600	33,45,900	28,825	26,55,500
1936-37 .	2,36,542	48,37,282	74,619	28,04,100

(11) *Letter, dated the 4th/5th August, 1937, from the Agent, The Madras and Southern Mahratta Railway Company, Limited, Madras.*

RATES FOR SUGAR, ETC.

Adverting to the Railway Board's letter No. 4440-T., dated the 23rd July, 1937, I have the honour to enclose two statements A & B, giving the details required in paras. 1 (a) and (b) of your letter No. 204, dated the 18th May, 1937, to the Railway Board.

Statement "A" gives the basis on which the present Railway freights are calculated together with particulars of changes which have occurred during the last seven years, in respect of—

Sugarcane,
Sugar,
Molasses,
Bagasse,
Limestone, and
Manures.

Statement "B" gives the income derived by the M. & S. M. Railway since 1930-31, from—

Sugar,
Molasses in bulk,
Gur, Jagree and Molasses not in bulk.

2. I regret that it is not possible to give figures for Sugarcane as receipts from the carriage of this commodity are included under the general head "Fruits and Vegetables".

Enclosure.

STATEMENT "A".

Rates over the Madras and Southern Mahratta Railway for certain commodities from the year 1931 to 1937.

Name of commodities.	1931.	1932.	1933.	1934.	1935.	1936.	1937.
1. Sugarcane . . .	1st class . . .	No change . . .	No change . . .	No change but from 1st June 1934, when booked in wagon loads W/120 B. G. W/81 M. G. bundles W/300 B.G. / loose W/180 M. G.)	No change . . .	No change . . .	No change . . .
2. Sugar . . .	2nd class . . .	No change . . .	No change . . .	No change . . .	No change . . .	No change . . .	No change . . .
3. Molasses . . .	Sch. C/L. OR : L. From 1st June 1931 Sch. C/G. OR : L. D/150.	Sch. C/G. OR : L. D/150.	No change . . .	No change . . .	No change . . .	From 1st May 1936, wagon load classification altered to : A (RR) 2 (OR).*	No change . . .
4. Bagasse (as waste refuse).	4th Class (small lot 3RR) W/200 BG : L.) 20R W/100 MG : L. Sch. C/M. OR : CC. L. Sch. C/FF. ORW/400 BG : L. W/270 MGL.	No change . . .	No change . . .	No change . . .	No change . . .	Ditto . . .	No change . . .
5. Limestone . . .		No change . . .	No change . . .	No change . . .	No change . . .	No change . . .	No change . . .
6. Manures . . .		No change . . .	No change . . .	No change . . .	No change . . .	From 1st February 1936 Sch. C/F. ORW/400 BG. ORW/270 MG.)	No change . . .

* No change in the effective rate.

Basis of charge.

	Pies per maund per mile.		Pie per maund per mile.
1st class	38	Sch. C/G. 1st 300 miles . .	380
2nd „	42	+ 301 to 400 . .	300
2A. „	46	+ 401 to 500 . .	200
3rd „	58	+ 501 to 600 . .	125
4th „	62	+ 601 to 700 . .	115
Sch. C/FF (for any distance)	100	+ Over 700 . .	100
„ C/F „ „ . .	140	Sch. C/L. + 1st 100 miles.	380
„ C/M-1st 75 miles . .	380	+ 101 to 300.	220
<i>plus</i>		+ 301 to 600.	130
76 miles to 300 miles . .	200	+ Over 600 miles	110
<i>plus</i>			
Over 300 miles	100		
Terminals and other extra charges to be levied in addition.			

STATEMENT "B".

Receipts from (1) Sugar, (2) Molasses in bulk, and (2) Gur, Jagree and Molasses not in bulk.

Years.	Sugar.	Molasses in bulk.	Gur, Jagree and molasses not in bulk.
	Rs.	Rs.	Rs.
1930-31	6,27,389	360	8,61,797
1931-32	5,54,344	..	10,28,667
1932-33	4,61,620	..	10,91,803
1933-34	5,28,660	..	10,67,143
1934-35	5,26,521	..	10,28,252
1935-36	5,57,186	..	9,38,355
1936-37	7,52,188	1,173	9,48,429

(12) *Letter, dated the 19th August, 1937, from the Traffic Manager "C", Assam Bengal Railway, Co., Ltd., Chittagong.*

Re:—INDIAN SUGAR INDUSTRY.

Your letter of 18th May, 1937, to the Secretary, Railway Board, Simla.

In compliance with the Secretary, Railway Board's endorsement No. 4440-T., dated the 23rd July, 1937, to the Agent, A. B. Railway, Chittagong, I beg to send herewith the informations asked for.

Enclosure.

Statement showing earnings from Sugar, Gur, Jagree and Molasses traffic.

Year.	Sugar.	Gur, Jagree and Molasses.
		Rs.
1930-31	93,024	76,208*
1931-32	74,900	1,01,351
1932-33	55,400	85,961
1933-34	55,400	54,057
1934-35	57,800	63,591
1935-36	58,700	69,168
1936-37	95,800	49,700

N.B.—Figures of sugarcane are not available.

* Excluding traffic in bulk. The earnings from Molasses (in bulk) are Rs. 45,596.



Statement of the basis of charge for the carriage of (1) Sugarcane, (2) Sugar, (3) Molasses, (4) Limestone and (5) Manures.

Articles.	Basis of charge over the Assam-Bengal Railway.	Whether any changes in basis made during the last 7 years.	Remarks.
Sugarcane	<p>(i) 2 annas 6 pies per 4-wheeled and 5 annas per bogie wagon per mile in local booking and in through booking <i>via</i> Mymensingh.</p> <p>(ii) 38 pie per maund per mile <i>plus</i> 1 anna terminal in local booking and 6 pies terminal charge in through booking.</p> <p align="center"><i>General.</i></p> <p>(i) 42 pie per maund per mile <i>plus</i> a terminal charge of 6 pies per maund in through booking and a terminal charge of 1 anna per maund in local booking.</p> <p>(ii) For traffic received <i>via</i> Katihar and Mymensingh—25 pie per maund per mile <i>plus</i> a terminal charge of 6 pies per maund.</p> <p align="center"><i>Special.</i></p> <p>(i) For traffic from Bengal and North Western Railway stations average basis—25 pie per maund per mile.</p>	<p>Basis shown in item (i) came into force from 1st January 1937 in local booking and 15th January 1937 in booking <i>via</i> Mymensingh. Before this the general basis of charge was as shown in item (ii).</p> <p align="center">In force from 5th September 1932.</p> <p>(i) First introduced from 1st February 1934.</p>	

Limestone	<p>For the first and upto 150 miles -140 pie per maund per mile.</p> <p>For extra distances above 150 miles to be added to the charge for 150 miles, -110 pie per maund per mile.</p> <p>Plus 1 anna terminal charge in local booking and 6 pie terminal charge in through booking.</p>	<p>No change</p>	<p>No change in basis but before May 1, 1931, the terminal charge on limestone was 6 pies per maund both in local and through booking.</p>	<p>(i) Station-to-station rates from Chittagong port to almost all Assam-Bengal Railway stations have been quoted for chemical manure at 30 pie per maund per mile plus a terminal charge of 1 anna per maund for short lead traffic and at the telegraphic basis shown below for long lead traffic:—</p> <p>For the 1st and upto 100 miles -200 pies per maund per mile.</p> <p>For extra distances above 100 but not exceeding 200 miles to be added to charge for 100 miles -170 pies per maund per mile.</p> <p>For extra distances above 200 miles but not exceeding 500 miles to be added to charge for 200 miles -140 pies per maund per mile.</p> <p>For extra distance above 500 miles to be added to charge for 500 miles -100 pies per maund per mile.</p> <p>Plus 1 anna per maund terminal charge.</p>
Manure	<p>(i) Chemical</p> <p>(ii) Non-Chemical</p>	<p>Same as limestone</p>		

- (13) Letter, dated the 27th August, 1937, from the Agent, His Exalted Highness the Nizam's State Railway, Secunderabad (Deccan).

Re:—FREIGHT RATES FOR SUGAR, ETC.

With reference to letter No. 4440-T., dated the 23rd July, 1937, from The Secretary, Railway Board, to your address, I beg to forward herewith two statements marked "A" and "B" showing the following information for the last seven years, i.e., 1930-37:—

Statement "A".—Basis of freight rates over this Railway for—

- (1) Sugarcane,
- (2) Sugar,
- (3) Molasses,
- (4) Limestone, and
- (5) Manures.

There is no traffic in bagasse over this railway hence no rate is quoted for it.

Statement "B".—The total income derived from the transport of—

- (1) Sugar, and
- (2) Molasses.

No separate statistics is maintained for sugarcane traffic.

Enclosure.

STATEMENT "A".

Statement showing the bases of existing rates over the Nizam's State Railway for the following commodities:—

No.	Commodities.	Bases of freight rates.	Remarks.
1	Sugarcane .	1st class or '38 pie per maund per mile Railway Risk <i>plus</i> a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking.	No change since 1930.
2	Sugar .	2nd class Railway Risk or '42 pie per maund per mile <i>plus</i> a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking.	No change since 1930.
3	Molasses .	2 Railway Risk; 1 Owner's Risk (i.e.) '42 pie per maund per mile Railway Risk and '38 pie per maund per mile Owner's Risk <i>plus</i> a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking.	Prior to 15th September 1935. Molasses was charged over this railway at II class Railway Risk, i.e., '42 pie per maund per mile <i>plus</i> a terminal charges of 16 and 8 pies per maund in local and through bookings respectively.

No.	Commodities.	Bases of freight rates.	Remarks.
4	Limestone.	<p><i>In Small lots.</i>—1 Railway Risk (i.e.) 38 pie per maund per mile <i>plus</i> a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking.</p> <p><i>In Wagon loads.</i>—At C/P schedule rate Owner's Risk, CCL.</p> <p style="text-align: right;">pie per maund per mile.</p> <p>For the first 75 miles 250</p> <p>+ For extra distances above 75 miles and up to 150 miles 170</p> <p>+ For extra distances above 150 miles and up to 500 miles 140</p> <p>+ For extra distances over 500 miles 100</p> <p>Terminal charge of 2 pies per maund both in local and through bookings is added in addition to the rates calculated on the above basis.</p>	<p>The Schedule C.P. rate came into operation only from 15th August 1932.</p>
5	Manures .	<p><i>In Small lots.</i>—1 Railway Risk (i.e.) 38 pie per maund per mile <i>plus</i> a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking.</p> <p><i>In wagon loads.</i>—at C/M schedule rate ORW/300 Broad Gauge ORW/200 Metre Gauge</p> <p style="text-align: right;">Pie per maund per mile.</p> <p>For the 1st 75 miles 380</p> <p>+ For extra distances above</p> <p style="text-align: right;">75 miles and up to 300 miles 200</p> <p>+ For extra distances over 300 miles 100</p> <p>A terminal charge of 2 pies per maund both in local and through bookings are levied in addition to the rates calculated on the above basis.</p>	<p>No change since 1930.</p>

STATEMENT " B ".

Statement showing the total income derived by the Transport of sugarcane, sugar and molasses during 1930-37.

Year.	Sugarcane.	Sugar.	Gur, rab, jaggery and molasses.*
		Rs.	Rs.
1930-31	} Figures not available. }	1,57,039	2,49,840
1931-32		1,44,367	1,95,160
1932-33		1,36,662	1,85,702
1933-34		1,60,284	1,28,358
1934-35		1,56,848	1,66,715
1935-36		1,76,250	1,47,805
1936-37		1,93,289	2,12,046

(14) Letter, dated the 2nd September, 1937, from the Agent, South Indian Railway Co., Ltd., Trichinopoly.

RATES FOR SUGAR, ETC., YOUR LETTER, DATED THE 18TH MAY, 1937, TO THE SECRETARY, RAILWAY BOARD.

As desired by the Secretary, Railway Board, in his letter No. 4440-T., dated the 23rd July, 1937. I send herewith a statement showing the changes made in the rates for sugarcane, etc., over this Railway during the last 7 years.

The total earnings derived from the transport of Sugar and Molasses over this Railway yearly since the year 1930-31 are as under:—

Year.	Sugar.	Molasses.
	Rs.	Rs.
1930-31	3,46,939	3,23,677
1931-32	3,59,861	2,86,485
1932-33	3,07,537	2,90,877
1933-34	3,20,336	2,86,485
1934-35	2,92,276	3,19,625
1935-36	3,28,464	3,37,955
1936-37	4,44,154	3,12,017

Nellikuppam is the only station to which a large quantity of sugarcane is booked and the earnings on traffic received at this station are as shown below. Figures over the entire system are not maintained.

Year.	Earnings on sugar-cane despatches to Nellikuppam.
	Rs.
1931	3,845
1932	11,792
1933	30,202
1934	47,856
1935	90,505
1936	90,179
1937 (till 30th June 1937)	1,06,250

* Separate figures for molasses are not available.

Enclosure.

Bases of Rates.

Year.	Molasses.				
	R. R.		O. R.		
	Class.	Schedule.	Class.	Schedule.	
				Miles.	Pic a maund a mile.
1930-31	2	42 pic a mad. a mile.	C/L.	1 to 100	. 380
				101 „ 300	. 220
				301 „ 600	. 130
				Over 600	. 110
				Miles.	Pic a maund a mile.
1931-32	Do.	..	From 17th August 1931— C/G.	1 to 300	. 380
				301 „ 400	. 300
				401 „ 500	. 200
				501 „ 600	. 125
				601 „ 700	. 115
				701 and over	. 100
1932-33	Do.	..	..	Ditto.	
1933-34	Do.	..	..	Ditto.	
1934-35	Do.	..	..	Ditto.	
1935-36	2	..	From 15th September 1935— CG. W/270 BG. From 1st November 1935— W/160 MG.	Ditto.	
1936-37	Do.	..	Do.	..	

Year.	Limestone.			
	R. R.		O. R.	
	Class.	Schedule.	Class.	Schedule.
				<div>Miles.</div> <div>Pie a maund a mile.</div>
1930-31	1	38 pie a maund a mile.	C/N. CC; OR; L.	<div>1 to 75 . . .333</div> <div>76 „ 150 . . .200</div> <div>151 „ 300 . . .170</div> <div>301 „ 400 . . .125</div> <div>Over 400 . . .100</div>
1931-32	Do.	..	Do.	....
1932-33	Do.	..	Do.	....
1933-34	Do.	..	Do.	....
1934-35	Do.	..	Do.	....
			From 1st Decem- ber 1936—	<div>Miles.</div> <div>Pie a maund a mile.</div>
1936-36	Do.	..	C/M.	<div>1 to 75 . . .380</div> <div>76 „ 300 . . .200</div> <div>301 and over . . .100</div>
1936-37	Do.	..	Do.	....

Year.	Manures.			
	R. R.		O. R.	
	Class.	Schedule.	Class.	Schedule.
				<div>Miles.</div> <div>Pie a maund a mile.</div>
1930-31	1	38 pie a maund a mile.	C/M. W/270 BG. W/160 MG. C/FF.	1 to 75 . . . 380 76 „ 300 . . . 200 301 and over . . . 100 10 pie a md. a mile for any distance.
1931-32	Do.	..	..	Ditto.
1932-33	Do.	..	..	Ditto.
1933-34	Do.	..	..	Ditto.
1934-35	Do.	..	..	Ditto.
				From 1st February 1936—
1935-36	Do.	..	C/F. W/400 BG. W/270 MG. OR; L.	} 14 pie a maund a mile for any distance.
1936-37	Do.	..	..	Ditto.

Year.	Sugarcane *		Sugar.		Bagasse †		Remarks.
	R. R.		R. R.		R. R.		
	Class.	Schedule.	Class.	Schedule.	Class.	Schedule.	
1930-31 .	1	38 pie a maund a mile.	2	42 pie a maund a mile.	..	..
1931-32 .	1	Do. .	2	Do. .	..	..
1932-33 .	1	Do. .	2	Do. .	..	..
1933-34 .	1	Do. .	2	Do. .	..	..
1934-35 .	1	Do. .	2	Do. .	..	..
1935-36 .	1	Do. .	2	Do. .	..	..
1936-37 .	1	Do. .	2	Do. .	..	..

* From 20th January 1936 sugarcane W/300 BG ; W/160 M. G. ; O. R. ; L. booked to Nellikuppam is charged at the following scale of rates. Prior to 20th January 1936 the same rates were charged as station-to-station rates:—

Miles.		Rate per maund.	
		A.	P.
1 to	5	0	6
6 „	10	0	7
11 „	35	0	10
36 „	50	1	0
51 „	60	1	2
61 „	70	1	3
71 „	80	1	4
81 „	90	1	5
91 „	100	1	6
101 „	110	1	7
111 „	120	1	8
121 „	130	1	9
131 „	140	1	10
141 „	150	1	11
151 „	160	2	0
161 „	170	2	1
171 „	180	2	2
181 „	190	2	3
191 „	200	2	4

† This commodity is not known in Southern India.

(15) Letter, dated the 4/5th August, 1937, from the Chief Traffic Manager, Jodhpur Railway, Jodhpur.

YOUR LETTER OF 18TH MAY, 1937, TO THE SECRETARY, RAILWAY BOARD, SIMLA.

As desired in the Secretary, Railway Board, Simla's letter No. 4440-T., of the 23rd July, 1937, to your address, I beg to enclose 2 statements, one showing the basis on which the present railway freight rates are calculated over this Railway for Sugarcane, Sugar, Molasses, Limestone, Manures and Bagasse and the other showing the changes in the basis of calculation during the last seven years.

The income derived from the transport of sugar by this Railway for each year since 1930-31 is as shown below:—

Year.	Income.
	Rs.
1930-31	1,13,657
1931-32	78,513
1932-33	85,153
1933-34	84,007
1934-35	1,08,805
1935-36	1,46,109
1936-37	3,12,579

Over this Railway there has been no traffic in molasses in bulk and traffic in sugar cane is very insignificant. As to molasses not in bulk separate statistics for this are not maintained but the combined income derived from the transport of the commodities, Gur, Jagree, Molasses (not in bulk) etc., in each year since 1930-31 is as shown below:—

Year.	Income.
	Rs.
1930-31	1,03,272
1931-32	1,32,908
1932-33	1,21,596
1933-34	1,43,208
1934-35	1,42,760
1935-36	1,73,611
1936-37	2,17,351

There is no traffic in Bagasse over this Railway.

Enclosure.

STATEMENT I.

Statement showing the basis on which the present Railway freight rates are calculated over the Jodhpur Railway.

Commodity.	Class of schedule rates at which chargeable with conditions and restrictions of application.	Basis of Charge.										
Sugarcane	1st Class	.38 pie per maund per mille <i>plus</i> terminal charge as shown below.*										
Sugar	2nd Class owner's risk. When booked from (a) Cawnpore, (Collectorgunge, <i>via</i> Cawnpore (Anwarganj), <i>via</i> Cawnpore Central Goods Shed, Rawatpur, <i>via</i> Kasganj, <i>via</i> Hathrays Road, <i>via</i> Idgah (Agra) and <i>via</i> Delhi Sarai Rohilla to stations on Jodhpur Railway and <i>via</i> (b) <i>via</i> Kuchaman Road to <i>via</i> Chilo and <i>via</i> Sujangarh. 2-A Class Railway Risk. In all other cases except those shown above. C/M Schedule owner's risk. L W/270 when in tins, casks or drums.	.42 pie per maund per mille <i>plus</i> terminal charge as shown below.*										
Molasses P/9		.46 pie per maund per mille <i>plus</i> terminal charge as shown below.* Pie per maund per mile. <table><tr><th>Miles.</th><th></th></tr><tr><td>0-380 for distances 1 to 75</td><td><i>plus</i> a terminal charge of 6 pies in local booking and 3 pies in through booking except cross traffic on which no terminal charge is levied subject to the minimum charge of Rs. 10 per each 4 wheeled Gauge Wagons.</td></tr><tr><td>0-200 Do. 76 to 300</td><td></td></tr><tr><td>0-100 Do. over 300</td><td></td></tr></table> Pie per maund per mile. <table><tr><td>C/B in case of distances less than 300 miles.</td><td>0-333 for any distance.</td></tr></table>	Miles.		0-380 for distances 1 to 75	<i>plus</i> a terminal charge of 6 pies in local booking and 3 pies in through booking except cross traffic on which no terminal charge is levied subject to the minimum charge of Rs. 10 per each 4 wheeled Gauge Wagons.	0-200 Do. 76 to 300		0-100 Do. over 300		C/B in case of distances less than 300 miles.	0-333 for any distance.
Miles.												
0-380 for distances 1 to 75	<i>plus</i> a terminal charge of 6 pies in local booking and 3 pies in through booking except cross traffic on which no terminal charge is levied subject to the minimum charge of Rs. 10 per each 4 wheeled Gauge Wagons.											
0-200 Do. 76 to 300												
0-100 Do. over 300												
C/B in case of distances less than 300 miles.	0-333 for any distance.											
	C/B Schedule owner's risk. L. C. C. When in C/J tank wagon.											

Pie per maund per mile. Miles.	<i>plus</i> terminal charge as shown below.*
380 for distances 1 to 150 miles.	333 for distances 151 to 250 miles.
	200 for distances 251 to 500 miles.
	130 for distances 501 to 700 miles.
100 for distances over 700 miles.	

Pie per maund per mile.

Miles.	<i>plus</i> a terminal charge of 4 pies per maund subject to the minimum charge of Rs. 10 per each 4-wheeled Metre Gauge Wagon.
0-200 for distances 1 to 100	101 to 200
0-170 Do.	201 to 500
0-140 Do.	over 500
0-100 Do.	

Miles.	<i>plus</i> a terminal charge of 2 pies per maund in through booking and 4 pies per maund in local booking subject to the minimum charge of Rs. 10 per each 4-wheeled Metre Gauge Wagon.
0-200 for distances 1 to 100	101 to 200
0-170 Do.	201 to 500
0-140 Do.	over 500
0-100 Do.	

C/O Schedule C. C., O. R., L. In local booking and in booking with branch lines.

C/O Schedule C. C., O. R., L. In through booking with foreign railways.

* Plus a terminal charge of 16 pies per maund in local booking and also a short distance charge of 3 pies per maund both in local and through booking for distances under 75 miles over the Jodhpur Railway subject to the differential rule as to the distances. No terminal and short distance charge to be levied on cross traffic.

Commodity.	Class of schedule rates at which chargeable with conditions and restrictions of application.	Basis of Charge.
Manures	C/F Schedule O. R., L. W/300	Pie per maund per mile. 0-140 for any distances . . . <i>plus</i> a terminal charge of 2 pies per maund in through booking and 4 pies per maund in local booking subject to the minimum charge of Rs. 10 per each 4-wheeled Metre Gauge Wagon.
C/B Schedule O. R., L. for small consignments . C/J		Pie per maund per mile. C/B in case of distances less than 300 miles. } 0-333 for any distance. Pie per maund per mile. C/J in case of distances 300 miles and over. } 0-333 Do. 151 to 250 } <i>plus</i> a terminal charge as shown below.* 0-200 Do. 251 to 500 0-130 Do. 501 to 700 0-100 Do. over 700
Bagasse	No basis of charge for " Bagasse " has been fixed as there is no traffic in this commodity over this Railway. Also Bagasse is not separately classified in Indian Railways Conference Association Goods Tariff No. 20.	

**Plus* a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking and also a short distance charge of 3 pies per maund both in local and through booking for distances under 75 miles over the Jodhpur Railway subject to the differential rule as to the distances. No terminal and short distance charge to be levied on cross traffic.

STATEMENT II.

Statement showing changes in the basis of calculation for Sugarcane, Sugar, Molasses, Limestone and Manures during the last seven years.

(1) SUGARCANE.

Sugarcane is chargeable over Jodhpur Railway at the classified rate of 1st class Railway rates and during the last seven years no change has occurred in the basis of calculation except in case of terminal as shown below :—

Former basis of calculation.

1st class . . .	{	.38 pie per maund per mile <i>plus</i> a terminal charge of 12 pies per maund (Changed to 16 pies per maund in local booking from 1st April, 1931) in local booking and 8 pies per maund in through booking and also a short distance charge of 3 pies per maund both in local and through booking on goods conveyed for distances under 75 miles.

(2) SUGAR.

Prior to 1st August, 1932, Sugar was charged over Jodhpur Railway at rates equal to, 1st class except from *viâ* Wadhwan to stations on Jodhpur Railway and *viâ* in which case 2nd class rate was chargeable.

From 1st August, 1932, the above rates were changed as follows :—

“Charged at rates equal to 1st class owner's risk when booked (1) from stations Cawnpore, *viâ* Cawnpore (Anwarganj), *viâ* Cawnpore Central goods shed, Rawanpur and *viâ* Kasganj to stations on the Jodhpur Railway and *viâ* Kuchaman Road, (2) from *viâ* Hyderabad (Sind) to stations on the Jodhpur Railway and *viâ* when carried for distances 300 miles and over, (3) from *viâ* Kuchaman Road to *viâ* Chilo and *viâ* Sujangarh, and (4) from Karachi and Kiamari *viâ* Hyderabad (Sind) to Nana and stations north of Nana including stations Nasirabad to Bhilwara on the metre gauge Section and *viâ* Delhi Serai Rohilla, *viâ* Agra Cantonment, *viâ* Idgah (Agra) *viâ* Hathras Road, *viâ* Kasganj, *viâ* Farukhabad, *viâ* Cawnpore (Anwarganj) and *viâ* Cawnpore Central Goods Shed. In all other cases it was charged at classified 2nd class rate at Railway rate”.

From 1st April, 1937, a subsequent change has been made as follows :—

“Charged at rates equal to 2nd class owner's risk when booked from (a) Cawnpore Collectorgunge, *viâ* Cawnpore (Anwarganj), *viâ* Cawnpore Central Goods Shed, Rawatpur, *viâ* Kasganj, *viâ* Hathras Road, *viâ* Idgah (Agra) and *viâ* Delhi Serai Rohilla to stations on the Jodhpur Railway and *viâ*, and (b) *viâ* Kuchaman Road to *viâ* Chilo and *viâ* Sujangarh. In all other cases at 2A classified rate at Railway rate”.

Basis of Calculation.

Pie per maund per mile.		
1st Class . . .	.38	{ <i>Plus</i> a terminal charge of 16 pies per maund (Prior to 1st April, 1931, terminal charge in local booking was 12 pies per maund) in local booking and 8 pies per maund in through booking and also in addition to this terminal charge of 3 pies per maund in local and through booking on goods conveyed for distance under 75 miles.
2nd Class . . .	.42	
2-A Class . . .	.46	

(3) MOLASSES.

Molasses was chargeable over the Jodhpur Railway at Schedule C/L Owner's Risk L. in local and through booking but from 1st June, 1931, it was changed to rates equal to 1st class owner's risk.

Again from 1st December, 1933, changed to:—

Schedule CB/CJ . . . { Owner's Risk W/270, L in tins.
Owner's Risk C. C. L. in tank wagons.

Lastly from 1st October, 1936, changed to:—

Schedule C/M . . . W/270 OR: L in tins, casks or drums,
and

Schedule CB/CJ . . . CC: OR: L in tank wagons.

Basis of Calculation.

	Pie per maund per mile.	For distances. Miles.	
C/L	.380 . .	1 to 100	} Plus a terminal charge of 12 pies per maund (Changed to 16 pies in local booking from 1st April, 1931) in local booking and 8 pies per maund in a through booking and also the short distance charge of 3 pies per maund when traffic is conveyed for distances under 75 miles both in local and through booking.
	.220 . .	101 to 300	
	.130 . .	301 to 600	
	.110 . .	Above 600	
1st class . .	.38		
C/B in case of distances less than 300 miles.	.333 . .	Any distance	
C/J in case of distances 300 miles and over.	.380 . .	1 to 150	} Plus a terminal charge of 16 pies per maund in local booking and 8 pies per maund in through booking and also a short distance charge of 3 pies per maund both in local and through booking for distances under 75 miles over the Jodhpur Railway.
	.333 . .	151 to 250	
	.200 . .	251 to 500	
	.130 . .	501 to 700	
	.100 . .	Over 700	
C/M	.380 . .	1 to 75	} Plus a terminal charge of 6 pies in local booking and 3 pies in through booking except cross traffic on which no terminal charge is levied (subject to the minimum charge of Rs. 10 per each 4-wheeled M. G. Wagon.)
	.200 . .	76 to 300	
	.100 . .	Over 300	

(4) LIMESTONE.

Limestone was chargeable over the Jodhpur Railway as under:—

Schedule.

C/Q . . . CC; OR; L in local booking and in through booking with the Bikaner State Railway.

C/O . . . CC; OR; L in through booking with foreign Railways except Bikaner State Railway.

Change from 1st May, 1936:—

Schedule.

C/Q . . . CC; OR; L in local booking.

C/O . . . CC; OR; L in through booking.

Basis of Calculation.

Schedule.	Pie per maund per mile.	For distances.	
		Miles.	
C/Q . . .	{ .200 . . .	1 to 100	} <i>Plus a terminal charge of 2 pies per maund (Changed to 4 pies from 1st January, 1936) subject to the minimum charge of Rs. 10 per each 4-wheeled wagon.</i>
	{ .170 . . .	101 to 200	
	{ .140 . . .	201 to 500	
	{ .100 . . .	over 500	
C/O . . .	{ .300 . . .	1 to 75	} <i>Plus a terminal charge of 2 pies per maund (Changed from 1st January, 1936, to 4 pies in local booking and 2 pies in through booking) both local and through booking subject to the minimum charge of Rs. 10 per each 4-wheeled wagon.</i>
	{ .170 . . .	76 to 400	
	{ .100 . . .	Over 400	

(5) MANURES.

Manures of all kinds including Chemical Manures N. O. C. was charged as under:—

Schedule.

C/FF . . . W/270; OR; L both in local and through booking.

CB/CJ . . . OR; L applicable to small consignments.

But from 1st May, 1936, Schedule C/F was substituted for C/FF.

Basis of Calculation.

Schedule.	Pie per maund per mile.	For distance.	
C/FF . . .	.100 . . .	Any distances	{ <i>Plus a terminal charge of 2 pies per maund (Changed to 4 pies in local booking and 2 pies in through booking from 1st January, 1936) both in local and through booking subject to the minimum charge of Rs. 10 per each 4-wheeled wagon.</i>
C/F . . .	.140 . . .	Any distances	{ <i>Plus a terminal charge of 2 pies per maund in through booking and 4 pies per maund in local booking subject to the minimum charge of Rs. 10 per each 4-wheeled M. G. Wagon.</i>
C/B in case of distances less than 300 miles.	.333 . . .	Any distances	} <i>Plus a terminal charge of 12 pies per maund (Changed to 16 pies in local booking from 1st April, 1931) in local booking and 8 pies per maund in through booking and also a short distance charge of 3 pies per maund both in local and through booking for distance under 75 miles over the Jodhpur Railway.</i>
C/J in case of distances 300 miles and over.	{ .380 . . .	Miles. 1 to 150	
	{ .333 . . .	151 to 250	
	{ .200 . . .	251 to 500	
	{ .130 . . .	501 to 700	
	{ .100 . . .	Over 700	

(16) Letter, dated the 2nd October, 1937, from the Agent, the Rohilkund and Kumaon Railway Co., Ltd., Gorakhpur.

RATES FOR SUGAR, ETC.

With reference to letter No. 4440-T, dated the 23rd July, 1937, from the Secretary, Railway Board, to your address—a copy of which has been sent to us for necessary action—I beg to enclose a copy of my Traffic Manager's letter No. R. K. 6/1, dated the 25th September, 1937, dealing with the basis on which our present freight rates are calculated on sugarcane, etc.

I also enclose a statement showing the total yearly income derived from sugarcane, sugar and molasses from the year ending March 1931. As regards item (b) (3) of your letter, figures for "molasses" are not separately compiled, but the commodity is included under the head "Gur, Jaggree, Molasses, etc."

Enclosure.

Copy of letter No. R. K. 6/1, dated the 25th September, 1937, from the Traffic Manager, Rohilkund and Kumaon Railway, Gorakhpur, to the Agent, Rohilkund and Kumaon Railway, Gorakhpur.

The commodities referred to in item (a) of the Secretary, Tariff Board's letter No. 204 of 18th May, 1937, copy received under your above, are charged over this railway as follows:—

1. *Sugarcane*.—Traffic in sugarcane is principally confined to local bookings and with a view to afford facilities for its movement a special wagon mile rate of 5 As. per 4-wheeled wagon per mile subject to a minimum charge of Rs. 8 per wagon has been quoted.

In through booking, however, the rate is generally 1st class (.38 pie per maund per mile) *plus* usual terminals but in cases where sugar factories intend to draw cane from foreign Railways stations, special rates have been quoted as shown in item 4 of this Railway's Foreign Rate Circular No. 6 of 1936, copy enclosed. A lumpsum rate of Rs. 8 per 4-wheeled wagon has been quoted for traffic booked from *via* Sitapur to Hargaoon.

There has not been any change in the basis of charge during the last seven years, except that during the last season the following reductions in the existing rates were notified to assist Ryots in disposing of their cane left over in the fields:—

From 15th April, 1937:—

Distances.	Reductions in the existing rates.
Miles.	Per cent.
50 to 75	25
Above 75	35

From 1st May, 1937:—

1 to 75	25	Subject to a minimum charge of Rs. 6 per wagon.
Above 75	35	

The above concessions remained in force up to 15th May, 1937.

2. *Sugar*.—Sugar when booked at owner's risk is charged over this Railway at Schedule C/J rates subject to condition D/150. The basis of C/J Scale is as follows:—

Distance.	Pie per maund per mile.
Miles. 1—150	·38
+151—250	·33
+251—500	·20
+501—700	·13
+Above 700	·10

Plus terminals, etc.

The 2nd class rates (·42 pie per maund per mile) *plus* terminals are charged when booked at railway risk.

In addition to the above scale, special through rates have been quoted from all the factory stations to the following destinations:—

Bombay, Karachi, Ahmedabad and certain other stations on the Bombay, Baroda and Central India and *via* Hyderabad (Sind).

This Railway's shares of these rates are as shown below:—

Stations to	Via Kasganj.	
	For traffic to Karachi,* Bombay,* Ahmedabad† and certain other stations on Bombay, Baroda and Central India Railway.	For traffic to Hyderabad (Sind).‡
	As. P.	As. P.
Sitapur and Sitapur-Thompsonganj	3 11 (a)	5 ..
Hargaon	4 0	5 4
Oel	4 0	5 4
Lakhimpur Kheri	4 0	5 3
Gola Gokaran Nath	4 0	5 2
Bhirakheri	4 0	5 1
Pilibhit	3 10	3 10
Phardhan	4 0	5 3
Bisalpur	4 0	4 8
Shahjahanpur (Metre Gauge)	4 0	4 6
Carewganj	4 0	4 7
Bhojeepura	3 0	3 0
Bareilly City	2 8	2 8
Baheri	3 8	3 8
Kichha	4 0	4 0
Manpur Nagaria	0 10	0 10

* In force from 1st January, 1935.

† In force from 20th March, 1936.

‡ In force from 1st May, 1936.

(a) Applies for traffic to Bombay and Ahmedabad.

There has not been any change in the basis of class rates during the period under review except that prior to the introduction of C/J scale from 1st January 1934, sugar when booked *via* Kasganj was charged at 1st class rates (-38 pie per maund per mile) *plus* terminals.

3. *Molasses*.—Molasses when booked at owner's risk is generally charged over this Railway at schedule C/D rates (-25 pie per maund per mile) *plus* terminals, etc. This scale is in force since 1st November, 1933, prior to which date this traffic used to be charged as for Jaggree at 1st class rates (-38 pie per maund per mile) *plus* terminals.

The following special rates have been quoted for molasses in local and through bookings:—

In local booking.

Stations.		Rate per maund.
From	To	
		As. p.
Pilibhit	Carewganj	1 3
Bareilly City	Lucknow City	3 0
Izatnagar	Lucknow City	3 0
Shahamatganj	Daliganj	3 0
	Aishbagh and <i>vice versa</i>	

In through booking.

Stations.		Rate per maund.
From	To	
		As. p.
Bareilly City <i>via</i> Lucknow		3 0
Izatnagar „ Daliganj		3 0
Shahamatganj <i>via</i> Aishbagh and <i>vice versa</i>		4 4
Sidhauli <i>via</i> Bareilly	(For traffic to Amritsar, Lyallpur, Butari, Jagadhari, and Phularwan.)	6 2
Ditto „ Moradabad		6 3
Hargaon		5 10
Lakhimpur Kheri		5 2
Gola Gokaran Nath		4 1
Puranpur		3 6
Pilibhit		4 2
Bisalpur		6 1
Oel		

Stations.		Rate per maund.
From	To	
Sidhauli <i>via</i> Bareilly	(For traffic to Begamabad, Daurala, Rohankalan, Mansurpur and Sonepat.)	As. p. 4 7
Ditto „ Moradabad		6 5
Hargaon		6 6
Lakhimpur Kheri		6 1
Gola Gokaran Nath		5 5
Puranpur		4 4
Pilibhit		3 8
Bisalpur		4 4
Oel		6 4
Sidhauli		8 0
Hargaon	<i>Via</i> Moradabad (for traffic to <i>via</i> Meerut City) and <i>vice</i> <i>versa</i> .	6 10
Lakhimpur Kheri		6 5
Gola Gokaran Nath		5 9
Puranpur		4 7
Pilibhit		3 11
Bisalpur	<i>Via</i> Moradabad (for traffic to Kotkapura).	4 7
Pilibhit		3 11
Itaunja		7 9
Ataria		8 0
Sidhauli		8 0
Kamlapur		7 9
Khairabad (Oudh)		7 5
Hargaon	<i>Via</i> Moradabad (for traffic to Delhi and Subzimundi).	6 10
Sitapur and Sitapur-Thompsonganj		7 4
Lakhimpur Kheri		6 5
Gola Gokaran Nath		5 9
Puranpur		4 7
Pilibhit		3 11
Bijauria		3 6

Stations.		Rate per maund.
From	To	As. p.
Bareilly City, Shahamatganj and Izatnagar.	Via Daliganj (for traffic to Ranikisarai.)	2 11
	Yadvendranagar	2 6
	Muftiganj	2 7
	Kerakat	2 8
	Dobhi	2 9
	Dudhaunda	2 11
	Rajatalab	2 7
	Sadat	3 0
	Dulahpur	3 0
	Dohri Ghat.	3 0
	Saiyedpur Bhitri	3 0
	Ghazipur City	3 0
	Ghazipur Ghat	3 0
Manpur Nagaria	Via Kasganj (for traffic to Muttra Cantt).	0 8
Bareilly City		1 11
Pilibhit		2 4
Manpur Nagaria	Via Kasganj (for traffic to Agra Fort or Belanganj.)	0 8
Bareilly City		1 8
Pilibhit		1 11
Baheri		2 3
Pilibhit	Via Lucknow and vice versa.	4 0
Gola Gokaran Nath	Via Sitapur (for traffic to Via Katihar).	0 11

With effect from 1st April, 1936, special rates at Owner's Risk have been quoted for molasses in tank wagons *ex-factory* stations to *via* Sitapur for traffic to Paleza Ghat. These rates are approximately based on 17th pie per maund per mile.

4. *Bagasse*.—We have not carried so far traffic in Bagasse over this Railway.

5. *Limestone*.—Limestone is charged over this Railway as follows:—

1st class rates.—(38 pie per maund per mile) *plus* terminals at Railway Risk.

C/EE Scale rates.—(167 pie per maund per mile) *plus* terminals, etc., at Owner's Risk; C. C.; L.

The above rates are in force for the last seven years. A special rate of 10 pies per maund has been quoted in local booking *ex*-Ramnagar to Moradabad City.

6. *Manures*.—Manures of all kinds when booked at Railway Risk are charged over this Railway at 1st class rates (38 pie per maund per mile) *plus* terminals, etc.

With effect from 15th August 1937, the following scales have been adopted for chemical manures.

In wagon loads.

Distance.	Pie per maund per mile.
1–150 miles	14 } <i>plus</i> terminals.
+151 and above	11 }

In smalls.

Miles.	Pie per maund per mile.
1–100	20 } <i>plus</i> terminals.
+101–200	17 }
+201–500	14 }
+501–miles and above	10 }

Manures when consigned by the Agricultural Department, North-East Circle, Gorakhpur, from Carewganj and Shahjehanpur (Metre Gauge) to Gorakhpur and Sardarnagar *via* Sitapur are charged as follows:—

Stations.		Rate per 4-wheeled wagon.
From.	To	
Carewganj	Gorakhpur	Rs. 56
	Sardarnagar	58
Shahjehanpur	Sardarnagar	57

Statement showing the total income derived by the Rohilkund and Kumaon Railway from the transport of "Sugarcane" and "Sugar" since 1930-31.

Year.	Sugarcane.	Sugar.	Molasses in bulk.
	Rs.	Rs.	Rs.
1930-31	11,566	1,95,533	...
1931-32	23,326	2,57,432	...
1932-33	74,298	3,24,216	...
1933-34	2,48,123	4,76,377	...
1934-35	3,98,985	5,45,842	...
1935-36	3,85,447	5,57,625	...
1936-37	5,12,820	8,56,916	2,342

(17) *Express letter, dated the 17th November, 1937, from the Tariff Board, to the Agent, East Indian Railway.*

I am directed to enquire whether for purposes of statistics published regarding movements of goods gur is classified with rab and molasses and if so since which year. Were the movements of gur published separately from those of molasses and rab at any period and if so, when? I am further to enquire whether this classification which existed regarding gur on the East Indian Railway was also observed on other railways in India. As the information is required very urgently for inclusion in the Sugar Tariff Board Report, I am to request that it may kindly be furnished very early.

(18) *Letter, dated the 19th/20th November, 1937, from the Agent, East Indian Railway, Calcutta.*

With reference to your Express letter, dated the 17th November, 1937, I beg to state that so far as I am aware the figures of Gur have always been classified, in Volume II of the Indian Railways Administration Report, with those of Jagree, Molasses, Rab, Shukkur, Treacle, etc. It is only comparatively recently that Railways have maintained separate figures for Molasses in bulk but packed Molasses are included in the main head "Gur, Jagree and Molasses not in bulk".

(19) *Letter, dated the 23rd November, 1937, from Tariff Board, to the Agent, East Indian Railway.*

Reference your letter, dated the 9th September, 1937. Kindly intimate your ton mileage of sugarcane carried and total revenue derived therefrom during 1936-37.

(20) *Letter, dated the 25th November, 1937, from the Agent, East Indian Railway, Calcutta.*

Re SUGARCANE TRAFFIC.

Your letter of 23rd November 1937.

In reply to your letter I beg to give below the figures asked for covering the 1936-37 season for this traffic and trust this meets your requirements:—

Month.	Tons.	Ton-miles.	Earnings. Rs.
November, 1936 . . .	38,413	1,298,542	29,629
		(Approximate)	
December, 1936 . . .	143,608	5,018,537	1,08,792
January, 1937 . . .	147,751	5,204,404	1,10,653
February, 1937 . . .	213,963	7,622,883	1,88,972
March, 1937 . . .	198,919	7,609,106	1,55,397
April, 1937 . . .	184,779	6,505,791	1,49,264
May, 1937 . . .	111,348	5,860,265	83,749
June, 1937 . . .	2,869	46,307	1,968
Total (for 8 months)	1,041,650	39,165,835	8,28,424

Replies received from the Chamber of Commerce and Associations.

(1) *Circular letter No. 173, dated the 12th May, 1937, from the Tariff Board, to Associations and Chamber of Commerce.*

I am directed to forward herewith a copy of the General Questionnaire prepared by the Tariff Board in connection with their enquiry into the

question of the extent of protection required by the Indian Sugar Industry during the period from 31st March, 1938, to the 31st March, 1946, and to ask that your replies, with 6 spare copies, may be forwarded as early as possible and in any case not later than the 25th June, 1937.

- (2) *Letter, dated the 6th August 1937, from the Bengal National Chamber of Commerce, 2, Royal Exchange Place, Calcutta.*

PROTECTION OF SUGAR.

With reference to your letter No. 173, dated the 12th May, 1937, forwarding copy of the Questionnaire issued by the Tariff Board in connection with their enquiry into the question of the extent of protection required by the Indian Sugar Industry during the period from 31st March, 1938, to 31st March, 1946, and your subsequent communication No. 213, dated the 22nd May, 1937, forwarding copy of the forms referred to in Question 80 of the General Questionnaire, I am directed by the committee of the Chamber to submit herewith 6 copies of a Memorandum containing the views of the Committee in regard to those questions which involve consideration of general principles and also those which are of special importance to this province.

2. I am to express the hope that the Memorandum will be given a careful consideration by the Tariff Board in arriving at a decision on their subject of enquiry.

Enclosure.

MEMORANDUM ON THE PROTECTION OF SUGAR—WITH REFERENCE TO THE QUESTIONNAIRE ISSUED BY THE TARIFF BOARD.

The Committee of the Chamber note that most of the questions are required to be answered by the factory-owners direct in connection with their respective factory establishments. The Committee would, therefore, confine themselves to such questions as involve considerations of general principle concerning the problems, requirements and the future prospects of the industry as a whole, and also to those questions on which they hold definite views based on their acquaintance with the local problems of sugar industry supplemented by the reports of experience of individual factories situate within the Province of Bengal. As the views and observations of the Committee are based on certain fundamental considerations which are closely inter-related and need to be urged upon the Tariff Board according to their relative importance, the Committee would like to discuss these in their logical order instead of taking them up *seriatim*, as given in the questionnaire.

Fixation of Quota and Licensing of Factories (Question 24).—The Committee presume that the question has been suggested by the fact that the industry has already reached the stage of overproduction, the consumption of sugar in India in 1936-37 being estimated at 11 lakhs of tons against an estimated production of about 12 lakhs of tons for the same year. Whether it is practicable to stimulate the consumption so as to bring it up to the level of the production of sugar, or whether as a preferable alternative we should concentrate upon the possibilities of tapping foreign markets to provide the necessary support to the indigenous industry are some pertinent issues which are directly suggested by this aspect of the problem and have to be carefully considered on their own merits. But even assuming that the possibilities of providing the necessary sustenance to the indigenous industry by such alternative methods are definitely barred out, the Committee of the Chamber do not consider that the adoption of any licensing system supplemented by a scheme of quota allotments to individual factories would be justified just at this stage of the development of the industry. The initiation of such a scheme at the present moment would not be in the real economic interest of the country, and the scheme, it is apprehended would

directly militate against the interest of provinces like Bengal, where the industry, despite very rich potentialities, remains conspicuously under-developed. The licensing system would, for such provinces, mean the permanent sterilisation of their potential growth just to keep going the existing factories including the marginal producer or what in common parlance would be called the least efficient, in other Provinces.

The motive underlying the demand for a licensing or a quota system is understandable, and the proximate reason is the result of the spectacular expansion of the sugar industry in the United Provinces and Bihar. The hectic expansion which the grant of protective tariff stimulated, was destined, sooner or later, to bring in complications in its trail, and of a nature as would react unfavourably on the industry itself. The depressed condition of the sugar market that has been continuing from the last year even while imports has been steadily falling off bears an unmistakable testimony to the fact that the industry is being seriously assailed by an internal competition and if this should continue for any length of time the uneconomic units are bound to be weeded off. It is interesting to note in this connection that the steady decline in prices of sugar from the last year has been more the effect of a panic in respect of a potential excess of supply over requirements than of an actual overproduction; for during all this time the prices of imported Java sugar has been much above the competitive level. If, in these circumstances, the mills situated mostly in areas outside the under-developed provinces should move in favour of the adoption of a system of licensing and quota, it is only to be regarded as a matter of course. But the application of such a scheme to a protected industry cannot be supported by the Government without prejudice to the interest of the consumer and also of the under-developed provinces. It need hardly be pointed out that the scheme would mean in effect the perpetuation of the uneconomic units in Bihar and the United Provinces where the expansion of the industry has manifestly been overdone.

Bengal, among all the under-developed provinces, cannot be subjected to such a scheme without inflicting a grave injustice on her. If she has been slow to respond to the stimulus of the protective tariff it was because of some peculiar handicaps of her own. She had no factories at the time of the imposition of protective tariff and no experience to quicken the necessary enterprise. As a matter of fact such enterprise was rather damped by the pessimistic view taken of the prospects of the sugar industry in Bengal in various official reports about the time of the first grant of protection to the industry in April, 1932. It was only when the catastrophic fall in the prices of jute, which had till recent years been the sole and pre-eminent commercial crop of the province completely changed the entire agricultural outlook and compelled the Government to launch out a scheme of jute restriction that the Government had to seriously think of other alternative crops and incidentally, on the basis of the latest experimental results, came to recognise sugarcane as an excellent substitute. If, in these circumstances, the establishment of sugar factories in Bengal has not been so quick or phenomenal as in other provinces the reason was to be found in the pessimistic views taken by the Government themselves till recent years about the possibilities of the industry in this province, along of course, with the other factors, already mentioned, that stood in way. But this belated growth of the industry does not in any way detract from the potentialities of this province for its development, and the very fact that inspite of the depressing outlook of the industry in this province till about a few years ago several large-sized factories were established in this province and have been expanding their operations from year to year, and that the construction of a few more are already under way even at a very depressed condition of the sugar market constitutes a definite proof that the potentialities of this province in the matter of developing the sugar industry offer a superior advantage as compared with Bihar and the United Provinces.

What further lends special weight to the claim of Bengal to develop her own factories is that she would not have to depend on any markets outside the province for the consumption of their output. In Bengal to-day there

are only four large sugar factories worth the name, all constructed within the space of the last four years or so. These factories together with a few more that can hardly be called economic units in the light of their tonnage capacity produce altogether about 23 thousand tons of sugar, while the annual consumption of sugar in this Province is estimated at about 130 thousand tons. The locally-produced sugar in Bengal thus amounts to less than 18 per cent. of her own requirements for consumption. The *Khandsari* process of sugar manufacture is practically unknown in Bengal.

The policy of fiscal protection looking for maximum efficiency after the period of necessary experimentation implies that the industry should find its natural centre of gravity and if through mistake or through over-done zeal a wrong choice is made in the construction of the factory units either in respect of time or place, they should not be allowed to stand in the way of a more rational growth of the industry, and may, if necessary,—particularly where these are found to be uneconomic units,—have to be completely scrapped out. Any interference with this natural process within the political borders of the country would be obviously detrimental to its economic interest. Even in India the Government have wisely been pursuing a policy of non-intervention when circumstances have revealed the transfer of the centre of gravity of any particular industry from its original site to be more expedient from the economic point of view. It was by this process that Ahmedabad has come to oust Bombay as the pre-eminent centre of the cotton textile industry in the Western Presidency, and if to-day Central Provinces coal has been claiming to hold its own against the competition of Bengal it is precisely on the ground of the superior advantage it possesses on account of its proximity to the industrial centres of Bombay. Bengal can thus legitimately protest against any scheme that would make her the victim of an irrational growth of the sugar industry in other provinces.

The Committee of the Chamber hope that the Tariff Board should not only commit anything that would impose any handicap on Bengal in this respect but also leave the effectiveness of Government assistance to the industry unabated even for the rest of the period for which the protection is due to remain in force. The Committee apprehend that if the measure of real and effective Government assistance to the industry is diminished at this stage it would set back the programme of the expansion of the industry in Bengal by accentuating the proverbial shyness of industrial capital in this province.

Assistance by Imperial Council of Agricultural Research and Provincial Agricultural Department (Question 52).—The cultivation of sugarcane in Bengal has so far obtained very limited measure of assistance from the Local Department of Agriculture and practically none worth mentioning from the Imperial Council of Agricultural Research. Ever since the official view in this Province turned in favour of the potentialities of sugarcane cultivation, the Provincial Department of Agriculture has been carrying on a systematic propaganda to grow sugarcane as an excellent substitute for jute crop. Although the propaganda has been inspired directly by the jute restriction scheme the Department has been showing a genuine earnestness in this regard. Owing, however, to its limitation of resources the result obtained by the propaganda have been much too slow as will be evident from the following figures:—

Year.	Total Sugarcane area in India.	Area under cane in Bengal.	Percentage of Bengal cane area.
	Acres.	Acres.	
1933-34 . . .	3,433,000	257,000	7.4
1934-35 . . .	3,602,000	276,000	7.6
1935-36 . . .	4,154,000	325,000	7.8
1936-37 . . .	4,573,000	355,000	7.7

The Committee of the Chamber have given their careful consideration to the subject, and they consider that in promoting the development of sugarcane cultivation in Bengal a greater measure of responsibility should devolve upon the Imperial Council of Agricultural Research than on the Provincial Department of Agriculture, though, of course, the latter must do its part in assisting the Imperial Council. The Committee of the Chamber would, in this connection, refer to the provision made by the Government of India for the creation of a fund from appropriations at the rate of one anna per cwt. from the proceeds of the excise duty on sugar and the utilisation of the same in the interest of the cultivators of Cane. In 1935-36 the accumulation in the fund amounted to Rs. 11.94 lakhs and out of this amount so much as Rs. 8.30 lakhs was distributed among the provinces of Bihar and United Provinces alone, the respective quota of these two provinces being Rs. 5.40 lakhs and Rs. 2.90 lakhs. This has been a great help to the Governments of the United Provinces and Bihar, and, in fact, a direct incentive to them in initiating valuable schemes for the improvement of cane in respect of quality, yield and prolongation of the period of cultivation.

But while the Committee of the Chamber mention these instances as a tangible proof of the manner in which the Government of India can, either directly or through the Imperial Council of Agricultural Research, render effective and valuable assistance in stimulating and initiating improved methods of cane cultivation in particular areas, they cannot but regret that the Government of India did not formulate a scientific basis on which the allocation from the fund should be made. Presumably the allocations have so far been made on the basis of acreage under cane in the various provinces and this accounts for the fact why by far the largest part of the fund has gone to United Provinces and Bihar, accounting respectively for 51.3 per cent. and 9.9 per cent. of the total cane area in 1936-37. The Committee of the Chamber should like to point out that the distribution of the aforementioned fund should have been made as much, if not more, in the interest of those consuming provinces which have potentialities for the development of the sugar industry, as in the interest of those where such potentialities have been adequately exploited, and where the cultivators of cane have already been getting a substantial benefit from the protective duty. As a matter of fact, this principle of allocation was recognised by the Government of India in 1931 when it was decided by them to allocate a specified share of the proceeds of the protective duty on Salt to the consuming provinces with the definite object of applying the same for the development of the salt industry in such provinces.

Considered from this standpoint the claim of Bengal to a liberal share of the fund created by the Government of India from the proceeds of the sugar excise duty stands amply vindicated. The Committee of the Chamber attach special importance to this claim because the province of Bengal having come rather late into the field and yet struggling in the experimental stage of the industry stands much more in need of Government support than any other province in quickening the development of the industry. One of the handicaps suffered by sugar factories in Bengal is the fact that their working at present cannot be extended much beyond four months owing to a shortage in the required supply of cane of early and late maturing varieties. In respect of quality and yield as well Bengal, as a late comer, has a considerable lee-way to make up. Evidently, the situation demands systematic research on a rather extensive scale and in fitness of things and also having regard to the limitation of resources available at the disposal of the Provincial Agricultural Department, the entire research work ought to be financed by the Government of India. The actual work may, under such a scheme, be entrusted to the Provincial Agricultural Department acting under the supervision of the Imperial Council of Agricultural Research. The Committee of the Chamber should like to stress the fact that one very effective way of stimulating the expansion of the industry in Bengal is to make a fuller revelation of the potentialities of this Province through systematic and well-organised research and that a special responsibility in this regard

rests with the Government of India, no less than with the Government of the Province.

Imperial Institute of Sugar Technology and Provincial Departments of Industries (Question 1).—The Committee of the Chamber understand that the Imperial Institute of Sugar Technology has not yet been found competent to render any valuable service to the industry such as are expected of a specialised institute of its kind. It appears that the main work of the Imperial Institute has so far remained confined to the compilation of statistics regarding the work of the sugar factory in India, while in the matter of technological research the only achievement of the Institute worth mentioning has been in connection with the introduction of various standards of sugar. While these services are no doubt appreciated the Committee of the Chamber are strongly of opinion that the Institute should concentrate its activities more and more on research work so as to be in a position to render valuable assistance to the industry in the matter of increasing their productive efficiency. The Committee are advised that an Institute of this kind organised by the industry itself in Java known as the Java Proof Station has been rendering services of immense value to the benefit of the sugar industry in Java. The Committee consider that the Imperial Institute of Sugar Technology in India should reorganise its activities on the lines of the aforementioned Institute in Java so as to be in a position to give expert guidance to the factories located in the various provinces on problems referred to it from time to time. The Committee hope that being inaugurated under the auspices of the Government of India the Imperial Institute should be in a position to render even more valuable assistance to the industry than its counterpart in Java. The Committee are informed that the industry in Bengal, particularly the factories, have not so far received any material help from the Provincial Industries Department. The Committee, however, consider that in matters relating to the sugar industry the possibilities of the Provincial Industries Departments in rendering any material help to the sugar industry are obviously very limited. The industry has come to be established practically throughout the country and the all-India character of its problems particularly in connection with the manufacturing technique requires that the responsibility of making continuous research and investigation into the technical problems should vest in the Imperial Institute of Sugar Technology, which of course, for the purpose of demonstration shall requisition the services of the Provincial Departments of Industries as and when necessary.

All-India Selling Organisation (Question 94).—The benefit of a Central Selling Organisation as an effective machinery for bringing uneconomic internal competition under control is admitted. The attention of the Committee of the Chamber has been drawn to the Sugar Syndicate recently organised by the industry with a view to acquire the unsold stocks of the member mills and sell the same at a remunerative price. It is reported that about 90 per cent. of the mills have already joined the Syndicate, which, accordingly, is considered to have been started under very good auspices. About the utility of the Syndicate it is yet too early to say anything with certainty except that it has for the time being, arrested the tendency of further decline in the prices of sugar. The fact that some mills situated not only in British India but also those established in the Indian States have not yet joined the Syndicate constitutes a vulnerable point which, may prevent the Syndicate from attaining a complete success.

As to the merits of the scheme, the Committee of the Chamber welcome the Syndicate in so far as it acts as a defensive organisation for maintaining the price of sugar at a remunerative level. This is necessary not only for ensuring the required measure of solidarity to the industry itself but also to help the underdeveloped provinces, with very rich potentialities, to have the necessary courage and confidence for embarking on schemes of expansion. The Committee would, however, like to point out that if the Syndicate at once comes to occupy the position of an effective monopoly and in its earnestness to maintain its hold on the entire industry fixes the price so high as to make it profitable even to the inefficient and uneconomic units the

scheme may ultimately lend itself to questionable practices of price control such as will militate against the interests of the under-developed provinces. If such contingencies, which will certainly call for necessary safeguarding manures, are precluded, the Syndicate should, in the opinion of the Committee, function as a really good model for industrial rationalisation for many of our indigenous industries that have been suffering from an uneconomic internal competition.

Future Market in Sugar (Question 98).—The Committee of the Chamber do not approve of the inauguration of a futures market in sugar in the present condition of the industry. Such a market would, of course, be welcome to the manufacturers if it were to provide them with proper hedging facilities and the market were supported equally by "bear" and "bull" operators. In the present condition of the industry when the internal demand remains the sole principle for guiding the activities of the buyers and the internal competition of the industry has been depressing the price of sugar, a futures market is bound to be dominated by "bearish" forces, to the prejudice of the manufacturers. If the idea behind a futures market is to help the steadying up of prices by widening the market itself, the extension must be a genuine one and it can be made possible only by opening up outlets for the export of sugar. Although as a matter of principle, more stringent rules have to be applied to a futures market in a manufactured commodity than in the case of any raw material for an industry, the Committee realise the special claims of the sugar industry to a certain measure of latitude owing to the seasonal character of the industry which prevents it from adjusting the supply to effective demand. Even so, having regard to the present outlook and limitations of the sugar market in India, the Committee consider that the inauguration of a futures market in sugar would be an extremely inadvisable step and positively harmful to the interests of the industry.

Present Sugar Contract Form (Question 85).—It has been brought to the notice of the Committee that the present contract form for sale of sugar has created an unfortunate misunderstanding between merchants and manufacturers of sugar in some instances, owing to the general character of the terms contained in the form recommended by the Indian Sugar Mills Association as to the quality of sugar bought and sold under such contract. Such a state of things though undesirable was hitherto inevitable in a sense owing to the absence of fixed standards. The problem, has, however, been engaging the attention of the Imperial Institute of Sugar Technology that has already prescribed certain standards. It is hoped that these standards will, before long, be accepted by all the factories as the basis of their dealings with the merchants, thus removing all grounds for misgivings regarding the quality of sugar. The Committee of the Chamber feel that the matter may be left to the parties concerned for an amicable and satisfactory settlement.

The Committee are, however, advised that in the interest of both manufacturers and the trade, the contract form should be suitably elaborated to provide certain new facilities akin to those that are now available in the gunny trade. The present contract form in the sugar trade enjoins delivery and payment against delivery on a specified date. In the gunny trade, on the other hand, the buyer enjoys the option of retaining the goods with the seller and receives a Delivery Order on payment of the value. The Delivery Order is transferable and provides a good security even for taking advances from banks. This arrangement has been found to be particularly helpful to the trade as enabling the buyer to hold on the stock (rather have the stock held on his account by the seller) during a depressed condition of the market and incidentally, to the sellers also by ensuring to them the continuous support of the buyers. In the present depressed condition of the sugar trade such an arrangement would eminently meet the requirements of both sugar merchants and the manufacturers. The merchants would, under such an arrangement, be spared the losses entailed by a compulsory acceptance of delivery on a specified date and the forced sale of the stock

in unfavourable conditions of the market at any price under the urge of meeting their financial obligations. The sugar factories also would gain by such a scheme as they would be spared the unfavourable reactions of the forced sales by merchants on the prices of sugar. The Committee of the Chamber accordingly urge upon the Tariff Board the importance of making a careful investigation into the feasibility of modifying the contract form so as to provide these facilities, in view of the immense advantage that would accrue from them to both the industry and the trade.

Transport of Cane (Question 33).—In the absence of adequate road facilities in the countryside of Bengal the sugar factories, particularly the bigger among them have to depend considerably on rail-borne cane for the supply of the raw material and the transport of such cane is practically confined to the Eastern Bengal Railway. The incidence of the freight has, in the light of the experience of one of such factories been thus estimated: First, a flat wagon rate of 5 annas per mile ($5\frac{1}{2}$ annas for a total distance of less than 70 miles) for wagons measuring less than 200 sq.ft. and $5\frac{1}{2}$ annas for wagons of a larger sq.ft. area is charged. This rate is subject to a minimum of Rs. 10 and to this was to be added, till recently, a siding charge of Rs. 4-8 per wagon of 23 tons capacity for sidings hardly covering the length of a mile. It is contended that although the rate of 5 annas is chargeable for wagons measuring 200 sq. ft., the floor space of wagons available against the requisition for such wagons is often found to be much less, sometimes as low as 179 sq.ft. The incidence of the total freight thus calculated has been found to be much heavier than in the case of factories served by the East Indian Railway. The following table specially prepared for the purpose reveals the difference between the wagon rate charged by the East Indian Railway in respect of a four-wheeled wagon with floor space of 200 sq.ft. and the corresponding rate charged by the Eastern Bengal Railway including in the latter case Rs. 4-8 for the siding charge, which in the East Indian Railway corresponds to the usual mileage charge, amounting to 5 annas for a mile of sidings:—

Mileage.	Eastern Bengal Rates.	East Indian Rates.	Difference.
	Rs. A.	Rs.	Rs. A.
10 . . .	14 8	10	4 8
15 . . .	14 8	10	4 8
20 . . .	14 8	10	4 8
25 . . .	14 8	10	4 8
30 . . .	14 13	10	4 13
35 . . .	16 9	10	6 9
40 . . .	18 4	12	6 4
45 . . .	20 0	13	7 0
50 . . .	21 12	14	7 12
55 . . .	23 7	15	8 7
60 . . .	25 2	16	9 2
65 . . .	26 14	17	9 14
70 . . .	28 9	18	10 8
75 . . .	30 0	19	11 0
80 . . .	31 12	20	11 12
85 . . .	33 2	21	12 2
90 . . .	34 11	23	11 11
95 . . .	36 4	24	12 4
100 . . .	37 13	25	12 13

The siding charge has very recently been reduced to Rs. 2 per wagon. Even so, having regard to the net difference between the freight charged by the two Railways it may be noted that the incidence of the freight still remains much heavier on the Eastern Bengal Railway. The Chamber has had occasion to take up the matter with the Eastern Bengal Railway Authorities but its claim for a substantial reduction of the freight has been resisted on the ground that the working costs of the Eastern Bengal Railway are much higher than that of the East Indian Railway. While the point underlying this argument is no doubt appreciated, the Committee of the Chamber are definitely of opinion that is under-developed provinces like Bengal the freight rate on sugarcane should be determined not so much by actual costs as by the fact that the allowance of special concessional rates facilitating a fuller exploitation of the resources of such provinces should be found adequately remunerative in the course of a few years when the industry is widely established offering a considerable larger volume of traffic. The Committee of the Chamber hope that this claim of the under-developed provinces will be endorsed by the Tariff Board.

*Possibilities of Increasing Consumption (Question 99).—*In the opinion of the Committee of the Chamber any estimate of the possibilities of increasing consumptions of sugar must be more or less conjectural, but they should like to stress the fact that the demand for sugar particularly of the masses is very elastic, varying according to the fluctuations in the prices of sugar. To a considerable proportion of the masses in India sugar yet remains a costly article of food and it is much due to this fact that the consumption of *gur* is yet so extensive in India. The attention of the Tariff Board may be drawn to the fact that the fall in the price of sugar in recent years has almost immediately been followed by a larger consumption. As, however, the price has already touched an uneconomic limit,—viewed from the standpoint of the productive efficiency of the majority of the factories in India,—the Committee do not consider that for the stimulation of further consumption of sugar one can look forward to any further decline in the prices without serious prejudice to the industry itself. Nevertheless, having regard to the fact that the possibilities of increased consumption are so materially dependent on the price factor the Committee of the Chamber should like to point out that an effective stimulus to the consumers as much as to the industry can be given by the Government of India by the reduction of the present sugar excise duty. As this duty now affects the entire production of sugar, the Committee of the Chamber believe that a substantial reduction in the rate of the duty will have a quick as well as an extensive effect.

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The Committee of the Chamber would also point out in this connection that a more extensive propaganda for stimulating the internal consumption of tea, such as has been undertaken by the Tea Market Expansion Board is likely to give a very effective and fruitful impetus to the consumption of sugar within the country.

*Effect of Sugar Excise Duty (Question 105).—*The Committee of the Chamber should like to draw special attention of the Tariff Board that while the effects of the excise duty on the industry as a whole have been palpably unfavourable it has dealt a terrible blow to the factories in Bengal, most of which were started about four years ago and had not even the breathing time before the excise duty was first imposed in 1934, not to speak of accumulating any reserve for carrying them through hard times. The factories in Bengal have particularly suffered because in the initial years of their working, which for reasons already explained, was more or less of an experimental nature, they could not be expected to earn any decent profits as compared with other industrial ventures launched in recent years. The following figures supplied by one of such factories relating to the results of its working during the last four years bear a clear testimony to the serious inroads which the excise duty has made into the earnings of the

existing factories in Bengal, and, incidentally, affected the prospects of the industry itself so far as this province is concerned:—

Official Year.	Amount of Excise duty charged.		Amount of Dividend paid to Shareholders so far.	
	Rs.	A. P.	Rs.	A. P.
1933-34 . . .	12,333	9 7	Nil.	
1934-35 . . .	1,06,824	13 9	50,000	0 0
1935-36 . . .	2,16,273	6 3	19,180	5 3
1936-37 (till May) .	2,63,993	1 0	Accounts not made up. The likelihood of paying any dividend at all is considered very small.	
Total .	5,99,424	14 7	69,180	5 3

Export of Indian Sugar (Question 104).—Compared with the export price of Java sugar the export of sugar from India just yet does not appear to be a practical proposition. Even so, the findings of some suitable outlets for Indian sugar in markets abroad is considered at present to be an indispensable necessity of the industry not only for relieving the present situation but also for consolidating the position of the industry. It need hardly be pointed out that in the present condition of the industry and the productive efficiency attained by it India can gain a share in the export markets only through schemes of reciprocal tariff preferences and one would have looked forward to the revision of the Indo-British Trade Agreement as offering a splendid opportunity in this connection. The United Kingdom at present imports a very large quantity of sugar amounting to more than 1½ millions of tons of which the bulk is supplied by countries outside the Empire; if only she should be persuaded to grant necessary tariff concessions to this country it would at once change the outlook of the industry in India bringing it well within the reach of the desired consolidation. India can legitimately press a claim for such preference on quite reasonable and forceful grounds having regard to the very extensive benefits that have been accruing to the United Kingdom directly as a consequence of the preferences accorded to her by India under the Ottawa Agreement, which is going to be shortly revised.

Unfortunately, however, India has been made to allow the opportunity almost slip out of her hands at the last International Sugar Conference held in London where export quotas for free world market for sugar was put down at 3·60 million tons for a period of 5 years, and a commitment was made on behalf of India that it would not export sugar overseas except to Burma. The mercantile community in India have already expressed their strong resentment at the extraordinary procedure in which the commitment was made on behalf of India without even asking a representative of the Indian industry to attend the Conference, despite the fact that India to-day is the largest sugar producing country in the world. An opportunity is, however, still available to India to disentangle itself from the unwarranted commitment as the latter is due to be ratified by the Indian Legislative Assembly, that will no doubt refuse its approval to the decisions of the Conference imposing an unfair check on all prospects of gaining a foothold in outside markets which the industry sorely needs at present for avoiding an imminent danger of disintegration as well as for maintaining its progressive character. The Committee of the Chamber hope that the Tariff Board will make a careful investigation into this aspect of the problem and duly

stress the requirements of the industry in this regard on the Government of India.

*Protection and other Measures of Assistance (Questions 109 & 110).—*The Committee of the Chamber consider that the present rate of duty should be continued for the remaining period of protection granted to the industry. The Committee apprehend that a suggestion may be made for the lowering of the tariff on the ground that the prices of imported sugar are much too high as compared with the prices of indigenous sugar, so that a reduction of the prevailing duty would not be prejudicial to the interests of the Indian sugar manufacture. The Committee should like to point out that such a line of argument overlooks certain important considerations of concern to the industry, and also the fundamental principle underlying the grant of protection itself. Account should be taken of the fact that the prevailing prices of sugar are not such as may be called "economic" prices, judged by the standard of efficiency attained by the factories in India. Besides, the idea behind the grant of protection was not that it should facilitate only a partial development of the sugar industry in India, but that she should be able to meet her entire domestic requirement without any prejudice to the interests of the consumer. If the protection were to prove itself fruitful, a steady decline in imports of sugar, such as has taken place during the last five years, and an eventual cessation of the same, were bound to follow almost as a natural consequence. As a matter of fact the conspicuous fall in the imports of sugar into India during recent years has demonstrated the very effectiveness of the protective tariff. And what adds to the significance of the success of the measure is the fact that the consumer has not the least suffered by it. Any reduction in the rate of import tariff in these circumstances would not only serve any purpose, unless an augmentation of imported sugar is looked for, but it would be positively inadvisable at this stage, as the industry in India is yet to attain the required degree of consolidation. In particular, the Committee of the Chamber should like to point out that a lowering of the tariff just at this moment will have very unfavourable reactions on the prospects of further development of the industry in Bengal, as the factories in this province being latecomers in the field have already been working under an initial handicap of having to bear a heavy excise duty even before attaining the profit earning stage. If in these circumstances any reduction in the rate of import duty which is of special significance to the Port markets, is brought about, it is seriously apprehended that the capitalists in Bengal such as are likely to be attracted to the sugar industry, will turn shy, and thus all opportunities of the expansion of the industry will be lost to this Province. The Committee of the Chamber would, therefore, strongly urge upon the Tariff Board the inadvisability of taking any action in the direction of lowering the import tariff at least for the rest of the period for which protection has been granted to the industry.

But even while the existing tariff should be continued yet for some years as an indispensable necessity of the industry, the Committee of the Chamber consider that for an expeditious achievement of its desired consolidation the Government should be persuaded to offer the industry some other forms of assistance for removing those difficulties and problems which the working of the industry during the last five years has brought to the fore. The measures of assistance required have already been indicated in this memorandum and are summed up hereunder:—

- (a) Vigorous research by the Imperial Council on early and late ripening varieties of sugarcane in order to help the factories to prolong their working season.
- (b) Concentration of agricultural experiments in under-developed provinces like Bengal and larger financial grants for the purpose to such provinces out of the special funds available at the disposal of the Government of India.
- (c) Re-organisation and extension of the research work undertaken by the Imperial Institute of Sugar Technology in lines more

profitable to the industry; also investigation by the said Institute into the possibilities of utilising the bye-products on a commercial basis.

- (d) Provision for better communication facilities for the transport of cane and the grant of special freight rates on railways in the under-developed provinces where this is justified by excellent potentialities for expansion.
- (e) Modification of the Contract from waving the condition of delivery on payment and facilitating the holding of stock by the selling factory on account of the buyer in a depressed condition of the market against issue of transferable Delivery Orders.
- (f) Substantial reduction in the prevailing rate of excise duty.
- (g) Opening of suitable export markets for Indian sugar and insistence by the Government of India on bringing sugar within the scope of the revised trade agreement with the United Kingdom.

(3) *Note prepared and forwarded by the Bengal Chamber of Commerce, Calcutta.*

This note has been prepared for the Committee of the Bengal Chamber of Commerce, by Members of the Chamber who are Proprietors or Managing Agents of Sugar Factories, in response to the Chamber's circular letter No. 181—1937 of 18th May, 1937. In this letter the Chamber circulated for the information of Members the questionnaire prepared by the Tariff Board in connection with their enquiry into the extent of protection required by the Indian Sugar Industry during the period from 31st March, 1938, to 31st March, 1946, a copy of which was forwarded to the Chamber by the Secretary to the Board under cover of his letter No. 173 of 12th May, 1937.

(1) Certain Individual Members have forwarded to the Chamber copies of their replies to the questionnaire. As, however, these have already been incorporated in the replies submitted to the Tariff Board by the Indian Sugar Mills Association and the Indian Sugar Producers Association it is not suggested that the Chamber should reply in detail to the Tariff Board questionnaire.

(2) It is nevertheless felt that this is an occasion on which some representation from the Chamber would be appropriate, since the Sugar Industry is believed to be second only among Indian Industries to the Cotton Industry in the number of persons for whom it provides employment, while the interests of Members of the Chamber in the Industry are not inconsiderable. The object of this note is therefore to embody the views of those Members who are interested, for incorporation in any representation which the Committee of the Chamber may be disposed to make to the Board.

(3) The Members of the Chamber concerned are chiefly interested in the Industrial aspect of the enquiry, to which aspect moreover the Board's terms of reference particularly relate. While not unmindful of the agricultural aspect, which they appreciate is of the highest national importance, the Members concerned desire to emphasise that industrial development has been an indispensable adjunct to agricultural development.

(4) Before considering the question of whether it is necessary to continue protection to the same extent as at present or to a greater or lesser extent, it is desirable to outline briefly the result of the Act up to the present time so far as the classes of person chiefly affected are concerned. This will necessitate reference to various statistics which are for convenience summarised in an Appendix, in which are also given the various references and authorities for the figures quoted.

(5) *The Result of the Protection Act—The Agricultural Aspect.*—The object to which the Tariff Board attached most importance when making their recommendations in 1931 was the provision of a fresh outlet for cane

by encouraging the expansion of the white sugar industry. Emphasis was also laid by the Board on the importance of cane as a cash crop, and the extent to which the Board's object has been achieved may be briefly summarised as follows:—

- (a) Between 1929-30 and 1936-37 the quantity of cane purchased annually by the Indian Sugar Factories has increased by ten and a half million tons, more than double the amount contemplated by the Board.
- (b) The amount paid to the growers by the Factories in cash has increased by nearly 7½ crores of rupees annually.
- (c) Cultivation of this additional cane alone has provided employment for between three and three and a half million persons.
- (d) The sugarcane rules promulgated under the Act by the Provincial Governments of Bihar and the United Provinces in which are situated approximately 75 per cent. of the total number of Factories in the country prescribe the minimum price to be paid by Factories for sugarcane and also protect the interests of the cultivator in other ways. As a result the cultivator receives a substantially higher price for cane sold to Sugar Factories than for cane grown for Gur, although the prices paid for the latter must themselves be remunerative in view of the enormous areas it is found worth while to cultivate for this purpose.

(6) *The Result of the Protection Act—The Consumers Aspect.*—In 1929-30 the price of sugar, whether Indian *ex-Factory*, or imported at port of entry, was over Rs. 9 per maund. Indian Sugar is now available in sufficient quantity to meet the full requirements of the country, and the price is approximately Rs. 6-4 *ex-Factory* or Rs. 7-4 at main ports. It is therefore evident that there has been no hardship to the consumer.

(7) *The Industrial Aspect.*—(a) In making their recommendations in 1931 the Tariff Board visualised an expansion of the production of sugar in India to between four hundred thousand and five hundred thousand tons. Production in 1936-37 was over 1 million tons.

(b) In calculating the fair selling price for Indian sugar the Tariff Board considered that a reasonable provision, at the time of their enquiry, for manufacturing charges, overhead, depreciation and profit was Rs. 4-7-7 per maund, and that by 1946 the amount necessary under these heads might be reduced to Rs. 4-3-2 per maund. The amount actually available under present conditions varies as between one Factory and another, but may be taken as approximately Rs. 1-10 per maund.

It is therefore clear that the result of the Act from the Industrial point of view has not been in accordance with the intentions of the Tariff Board, and it is accordingly desirable to investigate the reasons for this.

(8) *Examination of Industrial Development.*—Within a few months of the passing of the Protection Act the Government of India, for purposes of revenue, imposed a surcharge of 25 per cent. on all import duties. The measure of protection was consequently increased beyond the intentions of the Tariff Board and the Legislature, and this inevitably led to more rapid industrial development than was anticipated. This danger was recognised by the Government of India and reference to it was made by the Finance Member in his Budget speech on more than one occasion. Moreover a resolution on the subject was moved by the Bengal Chamber of Commerce at the meeting of the Associated Chambers in January, 1934. Imports of Sugar declined even more rapidly than had been anticipated by Government, with a consequent decline in revenue from the sugar import duty. To make good this loss of revenue, and in a belated attempt to retard the development of the Industry the Government of India imposed an excise duty on Indian sugar in April, 1934, justifying this on the ground that the industry was enjoying a larger measure of protection than had been considered necessary by the Tariff Board. In February, 1937, the

Government of India increased the amount of the excise duty to compensate for further loss of revenue due to imports having again declined more rapidly than had been foreseen.

It will be noted that the proposals of the Board have thus already been modified on three occasions by revenue legislation, and it is convenient at this stage to examine the Board's terms of reference under this head.

(9) *Part (b) of the Board's terms of reference.*—The Board has been desired to take into account Part (b) of the resolution adopted by the Legislative Assembly on 16th February, 1923, which reads as follows:—

“That in the application of the above principle of Protection regard must be made to the financial needs of the country and to the present dependence of the Government of India on import, export and excise duties for a large part of its revenue.”

This portion of the resolution constituted part of an amendment moved by the then Commerce and Industries Member, and in the debate preceding its adoption both the Commerce Member and the Finance Member laid special emphasis on the word “present”. The Finance Member in particular said:—

“I would draw the attention of the Hon'ble Members in the first instance to the word “present” which already finds a place in clause (b). . . . The fact that the Government at present depends on import, export, and excise duties does not in the least mean that the Government will necessarily depend so shall we say, three years hence.”

It seems therefore that it was by no means the intention of either Government or the Legislature, in adopting this part of the resolution, that the policy of protection should be permanently subordinate to considerations of Government revenue.

It may further be noted that part (c) of the same resolution recommended that the principle of protection should be applied with due regard to the safeguards suggested in paragraph 97 of the report of the Fiscal Commission, part 3 of which contains the following:—

“The Industry must be one which will eventually be able to face world competition without protection The protection we contemplate is a temporary protection to be given to industries which will eventually be able to stand alone.”

Since the former revenue from the sugar import duty and the present revenue from the sugar excise duty form an important item in the Indian Budget, it is evident that the Tariff Board will have to examine, *inter alia*, the following:—

(a) Whether a permanent excise duty is compatible with paragraph 97 of the Fiscal Commission's report, particularly if it is found that a permanent excise duty would necessitate a permanent protective duty.

(b) How any necessary measure of protection is to be related to the excise duty for so long as the latter may be continued. In this connection it is hoped that the Board will bear in mind the disturbing effect on the Industry of abrupt changes in the Protective or Excise Duties.

(10) *Result of revenue legislation on the working of the Protection Act.*—The necessity of a properly defined relationship between revenue and protective measures can be clearly shown from what has already taken place. Government's view that the introduction of the excise duty in 1934 was justified by reason of the customs surcharge proved correct inasmuch as a proportion of the industry was able, for the first two seasons, to earn a fair return on capital notwithstanding the amounts paid in excise. The Excise Duty nevertheless placed a heavy burden on those Factories which had been damaged by the earthquake which took place in January of that year.

By 1936-37, however, the full effect of the over-rapid development caused by the customs surcharge began to be apparent. Imports, which had

remained fairly steady between 1933-34 and 1935-36, declined by 178,000 tons in 1936-37. In spite of this Indian Factories for the first time carried forward unsold stocks at the beginning of the 1936-37 season, and with every indication of increased production in 1936-37 it was evident that saturation point had been reached and sugar prices fell rapidly.

The obvious remedy from the industrial point of view was to curtail output for the season and this possibility was under consideration by the Industry when Government increased the Excise Duty in February of this year. It was, however, realised that production could not be curtailed without undue hardship to the cultivator, on whose behalf urgent representations were made to the Industry by Provincial Governments. The latter, recognising that the Factories were not in a position, under the circumstances, to pass on the Excise Duty to the consumer, and that they could not afford to continue working at a loss, decided that the only way in which an outlet could be found for the cane available was to reduce the minimum rates prescribed under the Sugarcane Rules. This was accordingly done and in the case of sugar manufactured after 1st March it may be said that the increased Excise Duty has been paid, to a large extent, by the cultivator.*

In the case of sugar made before 28th February, however, the whole burden of the increase in Excise Duty has fallen on the Factory.

From the above it will be seen that both the unexpectedly rapid development of the Industry, and also the inadequate margin now available for manufacturing costs, are due, in no small measure, to the interference of revenue legislation with the intentions of the Protection Act.

(11) *Summary of Result of Protection Act.*—Summarising the above, it will be seen that the agricultural objects of the Act have been achieved without imposing any hardship on the consumer.

At the same time it may be noted that the decrease in the value of sugar imports, amounting to Rs. 15½ crores annually, represented in 1936-37 no less than 20 per cent. of India's favourable balance of foreign trade.

Government Revenues have, however, been seriously affected, and, owing to output having reached saturation point, Factories are no longer able to obtain the fair selling price intended by the Tariff Board.

In the light of this position it is possible to consider proposals for the future.

(12) *Proposals for the future.*—Since the Protection Act primarily affords Industrial protection, it is perhaps convenient to put forward first those proposals which chiefly relate to the Industrial aspect. First and foremost is of course the measure of the Protection to be afforded, but, since it has already been laid down by the Tariff Board that Protective Duties are effective only in so far as the price of the protected commodity is regulated by the price of imports, it is equally important to ensure that the proposed measure of Protection shall be effective. The position in which the Industry now finds itself amply shows the necessity of this.

(13) *The Measure of Protection.*—It is impossible to suggest what the fair selling price of sugar should be without knowing the form which the Board's recommendations will take with regard to Excise, and without knowing what they may consider to be a fair price for sugarcane in the future. Certain general principles may, however, be stated—

- (a) For so long as it may be considered necessary to continue an Excise Duty on sugar the amount of such duty should be fixed under the Protection Act, and such amount should be taken into consideration when determining the measure of Protection. The rate of the Excise Duty should not be subsequently changed

* In Bihar the minimum price under the Cane Rules was reduced from 4½ annas at the end of February, to 2½ annas for Rail Cane, and 3 annas for Gate Cane, by the middle of May.

by Government without first referring the matter to the Tariff Board for investigation.

- (b) Whatever may be the views of the Board regarding the compatibility of the Excise Duty with the third condition laid down by the Fiscal Commission, it is inevitable that any Excise Duty must delay the fulfilment of this condition, namely, that the Industry shall eventually be able to face world competition without protection.
- (c) The time within which the Fiscal Commission's third condition can be fulfilled is further dependent on the rate at which the quality of sugarcane can be improved and its cost reduced.
- (d) The cost of manufacturing white sugar from sugarcane depends, among other things, on the length of the crushing season and the quantity and quality of cane available. These in turn depend on climatic and other conditions, and constitute an element of risk which distinguishes the Sugar Industry from other Protected Industries. It is hoped that the Board will bear this in mind in considering what is a fair return on the capital invested in the Sugar Industry.

(14) *How the Measure of Protection is to be made effective.*—The statistical position shows that production equals, even if it does not exceed, demand. It is equally certain that with the improvement of cane, with improvements in extraction, with a longer season due to earlier and later ripening varieties of cane, and with increased capacity of Factories due to extensions or improvements in practice, production will continue to increase. Even if demand also increases and no new Factories are built it is therefore evident that for some time there will continue to be danger of over-production.

Sugar is a perishable commodity and a small surplus, or the possibility of it, has consequently a disproportionately depressing effect on prices. It is therefore particularly desirable that the Board should consider whether any measure of Protection they may recommend will be effective without some form of control of production or some provision for the disposal of any surplus produced.

It is understood from Press Notices that an undertaking was given at the International Sugar Conference this year that India would not export sugar for a period of five years. There appears therefore to be little object in investigating the economic possibilities of the disposal of surplus production by export.

It has been suggested that the present depression of prices is solely due to lack of organised marketing. It is, however, difficult to see how any form of organised marketing will solve the problem of overproduction, since, while it may be economically better to sell 9 maunds at Rs. 8 per maund than 10 maunds at Rs. 6 per maund, this does not provide an answer to the question of how the surplus maund is to be disposed of. If it cannot be consumed, or exported or stored for future use, it can only be destroyed, in which case it is surely more economical to refrain from manufacturing the surplus in the first instance. In other words once production exceeds demand organised marketing cannot be dissociated from some form of control of production.

To regulate production by voluntary methods is always difficult and would be particularly so in the case of so large an Industry, especially since the nature of the industry is such that economical working is very largely dependent on maximum output. Even supposing that voluntary control of production could be secured among the hundred and fifty Factories, comprising the Industry, this would moreover afford no protection against future promoters of ill-judged or ill-timed ventures.

If therefore unrestricted competition is to be avoided it seems essential that Government should assist in regulating production, and it is suggested that this could best be done on lines parallel to the measures which have already been adopted in the case of the Indian Tea Industry.

If a Body constituted on lines similar to the Indian Tea Licensing Committee were empowered by Government to fix a quota at the beginning of each season, such quota being expressed as a fixed percentage to be calculated on the highest production of each Factory for any season during the past five years, it would be possible to regulate production very closely in accordance with demand. Until such time as this quota reached a figure of 100 per cent. new Factories should not be allowed to be built, but as soon as demand was found to exceed the capacity of existing Factories the Licensing Body would be able to indicate the extent to which there was room for the construction of new Factories. It would then be possible for Government to refer proposals for the erection of new Factories to an impartial Board of Arbitration to be appointed for the purpose, who would consider such proposals on their merits and be guided in their decisions by general principles which could with advantage be laid down by the Tariff Board.

With output regulated in this manner it is felt that the Industry might be left to make such marketing arrangements as it may find suitable, without the necessity of further assistance from Government. Even if demand were overestimated and a surplus resulted in any year this need not unduly depress the market if it were understood that such stocks would be taken into account when determining the quota for the following season, since under these circumstances it would be more advantageous to re-melt surplus sugar than to sell at panic prices.

Consumers on the other hand would be in no danger of having to pay excessive prices, since internal prices could never be raised above the landed cost of foreign sugar, which level would in turn be determined by the extent of the measure of protection.

The effect of controlled production on the cultivator will be further considered at a later stage, but it may be pointed out here that the quantity of cane which factories can purchase is ultimately determined, not by the capacity of the factories, but by the quantity of sugar they can market, that is to say, by the demand for sugar in the country. It will also be appreciated that the ability of the factories to pay the cultivator a fair price for his cane is dependent on their being able in their turn to command a fair price for their sugar.

Regulated Production therefore involves no limitation on the quantity of cane for which an outlet will be provided, while, by assuring the Factory of a fair price for its sugar it also ensures the cultivator of a fair price for his cane. It would of course be necessary to obtain the co-operation of Indian States in any system of quota and license. Since, however, factories in the States derive equal benefit from the protective duties, it is only reasonable that they should co-operate. Otherwise, failing such co-operation on the part of any State, and in order to prevent uncontrolled competition by factories established there, it would be reasonable for the Government of India to impose a countervailing duty on sugar exported from such State into another State or into British India. It may be noted incidentally that the Government of India has already approached sugar-producing States for their co-operation in the imposition of the excise duty.

(15) *Supplementary industrial proposal in connection with molasses.*—In 1931, the Tariff Board based their calculations on the assumption that molasses was then worth Rs. 1-8 per maund, and that by 1946 the price would not have fallen below Re. 1 per maund. The price to-day is just over 1 anna per maund and even at that price demand is insufficient to absorb production. The output of molasses is over half a million tons a year, and at the present time this asset, which is potentially of great national value, is virtually wasted. It is, therefore, imperative that investigation be directed toward finding some profitable use for molasses. The manufacture of Power Alcohol stands out as the first case for investigation since its commercial production from molasses has already been successfully adopted in other countries. Hitherto Government have refused to give this possibility their

serious consideration, although it does not appear that any adequate investigation has been made, and they do not appear to have stated any incontrovertible reason for this refusal. As an alternative to the manufacture of Power Alcohol investigation should be made regarding the possible use of molasses for other purposes, such as road construction, use as a cattle food, or use as manure. But this should not be done unless and until its use as a raw material for the manufacture of Power Alcohol has been fully investigated and found impracticable or undesirable for some good reason.

(16) *Agricultural Proposals*.—The main object of the Tariff Board in 1931, namely to develop the manufacture of white sugar in order to provide an outlet for cane, has been achieved and further development of this object is dependent on the ability of the country to consume more white sugar. There remain, however, other agricultural aspects which the Board will wish to consider, and these may conveniently be divided under two main heads:—

- (a) Measures relating to the welfare of the cultivator.
- (b) Measures for improving the quality and reducing the cost of cultivation of sugarcane, by which means alone the Indian Sugar Industry can become able to face world competition and fulfil the third condition of the Fiscal Commission.

(17) *Proposals connected with the welfare of the cultivator*.—The main requirements of the cultivator are that he may find a market for the cane he grows and that he may receive a fair price for it. Both these questions involve consideration of the relation between supply and demand.

(18) *Regulation of supply of cane to demand*.—During the period of rapid development of the industry an increased area was planted with sugarcane each year, and while supply has not so far exceeded demand the area under cultivation cannot continue to increase unless there is also an increase in the demand for the production of sugar. Although there may not have been a surplus of cane, as yet, supplies have, however, been unevenly distributed, with the result that there has been a shortage in some areas and a surplus in others. Since the transport of cane is uneconomical, both by reason of the heavy incidence of freight and due to the deterioration which takes place during transport, it is desirable that supplies of cane should be properly distributed. Otherwise the cultivator is either left without a market for his crop, or cane must be wastefully transported at the ultimate expense of the Factory or the grower, or both.

It will at once be seen that regulation of production of sugar would automatically regulate the demand for cane, and provide a basis on which to consider measures for regulating the supply. At present the demand of each Factory varies from year to year and in these circumstances there is no stable basis on which to attempt to regulate supplies of cane to Factory requirements.

The aim and practice in sugar-producing countries has always been for the Factory to be established in the centre of an area sufficient to supply its whole cane requirement, neighbouring Factories being similarly situated, but at sufficient intervals of distance to enable each Factory to obtain its requirements without encroaching on the area of supply of another Factory. In these circumstances, where each Factory has its own defined zone, planting can be planned in accordance with the quantity of cane which each Factory proposes to crush. This is clearly an ideal arrangement on which, so far as circumstances permit, plans for future progress in India should be based.

Where existing Factories are situated at a sufficient distance from others, adequate zones of supply can be maintained provided steps are taken to prevent the erection of new Factories within them and under the proposed system of License and quota this would be practicable.

Unfortunately, owing to the lack of any planned arrangement, many Factories are so closely adjacent as to make it impossible for each to have a zone of supply of sufficient size. Even in such cases it is not too late to apply the principle in part and assign to each Factory a zone of supply of

such size as circumstances permit. Each would then have an area on which it could depend for a proportion of its requirements, and the quantity available from this area could be ascertained by estimation of the crop before the beginning of each crushing season. For the balance of its cane supply any Factory so situated would require, as at present, to import cane from a distance. As, however, progress in agricultural development is made any given area will become capable of growing a larger quantity of cane, so that the proportion of the supply which it would be necessary to import from a distance should steadily decrease.

It would be possible in theory to extend the zoning principle to distant areas of supply also. Climatic and other factors will, however, inevitably create discrepancies, however, carefully planting may be regulated, and for this reason it is suggested that areas of supply outside the immediate neighbourhood of Factories should not be divided into zones reserved for any individual Factory, but should form a general reserve of supply common to all Factories. In this way discrepancies between supply and demand in the case of individual Factories would average out, and supplies from the reserve area would automatically be absorbed where most required.

It will be seen that a system of zoning on these lines, combined with regulated production of sugar by a system of quota and license would go far to rationalise the industry, since a direct link would be provided between the planting of cane for Factory use and the demand in the country for white sugar.

(19) *Regulation of the price of cane.*—One of the main objections to zoning in the past has been that the cultivator in each zone would be at the mercy of a single Factory for the purchase of his cane and the price to be paid for it. The two chief sugar provinces have shown that this danger can be successfully averted by sugar cane rules under which a minimum price and other safeguards are assured. The existing sugarcane rules are still in process of evolution but it has already been established that the cultivator's interests can be adequately protected by such means without detriment to the interests of the Factory.

It is suggested, however, that in one particular respect a mistake in principle has been made, inasmuch as the minimum prices for cane are related to the market price of sugar and not to the cost of cultivation of cane. On the one hand this places the cultivator at the mercy of the sugar market, while on the other it makes no provision for that reduction in the cost of raw material which is essential if the industry is ultimately to be able to dispense with protection. The fact that the minimum prices are revised at fortnightly intervals in accordance with the fluctuations of the sugar market is a further disadvantage, since neither the Factory nor the cultivator know from fortnight to fortnight what the price of cane will be. The disadvantages to the cultivator are obvious, and while it may be argued that in the case of the Factory no hardship is involved if the price of the raw material fluctuates in sympathy with the price of the finished product, it must be remembered that all sugar cannot be marketed as it is produced. For instance sugar manufactured early in the season from cane purchased at a high price, may eventually be sold later in the season at much lower rates. It is accordingly suggested:—

- (a) that the minimum price to be paid for cane should be laid down in advance for the whole of each season.
- (b) that such minimum price should be fixed in relation to the cost of cultivation of cane, and that this should be determined from year to year in accordance with the progress of agricultural development. Thus, as the yield per acre increases, and losses from pests and diseases are reduced, the cost of cultivation per maund of cane will be reduced, and its price can also be reduced without hardship to the cultivator.

(20) *Proposals for agricultural development.*—Since this is a question on which the Board will have received expert evidence and since moreover it is a subject which has engaged the attention of the Imperial Council of

Agricultural Research for some years past, it is not necessary to do more than set out the main directions in which, from an industrial point of view, progress is most needed. These are as follows:—

- (a) Earlier and later ripening varieties of cane to extend the length of the crushing season.
- (b) Varieties of cane giving a higher yield per acre.
- (c) Varieties of cane having a higher sucrose content.
- (d) Varieties of cane having a higher resistance to pests and disease.
- (e) Propaganda to encourage the cultivator to make use of such varieties when available.
- (f) Investigation into the origin of pests and diseases, and means for their prevention and cure.
- (g) Propaganda to educate the cultivator in means for the eradication of pests and disease.
- (h) Propaganda to encourage the cultivator to adopt more efficient methods of cultivating, irrigating, manuring, and draining his land.
- (i) Better roads for the transport of cane, and improved facilities for the construction of ropeways, tramways, etc.

(21) *Summary of proposals.*—In conclusion, it will be seen that the main proposals which have been made are:—

- (a) That the Excise Duty, if continued, should be fixed under the Protection Act, and that no change in the amount of such duty should be made without reference to the Tariff Board.
- (b) That in fixing the measure of protection the Board will bear in mind the agricultural risks which distinguish the Sugar Industry from other protected Industries.
- (c) That production of sugar should be regulated by a system of license and quota.
- (d) That the possibility of finding some profitable outlet for molasses should be investigated.
- (e) That the supply of cane be regulated to demand by means of a system of zoning.
- (f) That the minimum price to be paid by factories for sugarcane should be fixed in advance for the whole of each season.
- (g) That such minimum price should be fixed in relation to the cost of cultivation of cane and not in relation to the price of sugar.
- (h) That further research be carried out with a view to the introduction of improved varieties of cane.
- (i) That investigation be carried out in connection with the prevention and cure of pests and diseases.
- (j) That propaganda be initiated to encourage the cultivator to use improved varieties of cane, to take steps for the prevention and cure of pests and diseases, and to adopt improved methods of cultivation.

(k) That steps be taken to improve facilities for the transport of cane.

(22) *Conclusion.*—Speaking in the Legislative Assembly on 27th February, 1937, the Finance Member said:—

"I have already mentioned the plight to which overproduction has reduced the Industry. In so far as enhanced excise will check this tendency by eliminating the weak and inefficient producer it will have a salutary effect. I believe the effect on the cultivator will also be beneficial, for it is no advantage for him to be induced to grow cane for supply to the precarious manufacturer, who cannot be relied on to take the crop off his hands."

The Finance Member's remarks were criticised at the time as showing a lack of sympathy for the Sugar Industry, but it is at least evident that he

appreciated the dependence of the welfare of the cultivator on that of the Industry. It is, however, by no means equally clear that the Interests of the Industry will be best served by a struggle for existence under circumstances of overproduction. Nor does it follow that the Industry will benefit by established concerns, bearing the double burden of an Excise Duty and a fixed price for their raw material, being left at the mercy of new ventures attracted perhaps by a period of merely temporary prosperity. In expressing the hope that the Board will give this aspect of the problem their special consideration, it may not be out of place to repeat the warning given by the Fiscal Commission in 1922:—

“There would be a real danger to the industrial progress of the Country if any attempt were made by high or indiscriminate protective duties to force the pace too rapidly. If unnecessarily high duties were imposed a large number of Concerns would be started; there would be a boom, followed by the inevitable sequel of overproduction and collapse. The development of Industries would be pushed beyond the limit of what is economically safe, and the resultant collapse would shake that very confidence of capital which it is one of the main objects of our recommendations to build up.”

In the case of the Sugar Industry there is still time to avert the collapse of which the Fiscal Commission pointed out the danger, and the responsibility of doing so is not the least of those with which the Board is confronted.

Enclosure.

Appendix of Statistics relating to the Indian Sugar Industry.

PART I.—STATISTICS FOR 1929-30.

(A) *Indian Sugar—*

Sugar produced (Tariff Board Report, page 20) 89,800 tons.
Ex-Factory price (Tariff Board Report, page 70) Rs. 9-7-3 per maund.
 ∴ Value of production Rs. 2,31,00,000.
 Sugar produced as above 89,800 tons.
 Average extraction (Tariff Board Report, page 21) 9·07 per cent.
 ∴ Cane crushed in Factories 990,000 tons.
 Fair delivered price for cane (Tariff Board Report, page 60) As. 8 per maund.
 Cost of delivery to Factory (Tariff Board Report, page 60) As. 1½ per maund.
 ∴ Fair price before delivery As. 6½.
 ∴ Cost of cane crushed by Factories before delivery Rs. 1,09,50,000.
 ∴ Cost of delivering cane to Factories Rs. 25,25,000.
 ∴ Total value of 89,800 tons sugar produced was made up as follows:—

	Per maund.	
	Rs.	Rs. A. P.
Cost of cane	1,09,50,000	or 4 7 8
Delivery of cane	25,25,000	„ 1 0 7
Excise . . . . .	...	...
Balance for manufacturing overhead, depreciation and profit	96,25,000	„ 3 15 0
Total <i>ex-Factory</i> value	2,31,00,000	„ 9 7 3

(B) *Imported Sugar*—

Sugar imported of Dutch Standard 16 and upwards (Accounts of Sea-borne trade, 937,662 tons.

Value of above (Accounts of Sea-borne trade) Rs. 15,48,52,094.

∴ Average c.i.f. value was Rs. 6-1 per maund.

Imports 1st April, 1929, to 28th February 1930 (Accounts of Sea-borne trade) 851,432 tons.

Imports 1st March, 1930, to 31st March, 1930 (Accounts of Sea-borne trade) 86,230 tons.

Duty on the above at Rs. 4-8 and Rs. 6 per cwt., respectively, amounts to Rs. 8,69,76,480 for the year which is equal to Rs. 3-6-7 per maund.

∴ Landed value of 937,662 tons imported was made up as follows:—

	Per maund.			
	Rs.	A.	P.	Rs.
C.i.f. value	6	1	0	or 15,48,52,094
Customs Duty	3	6	7	„ 8,69,76,480
Landed value	9	7	7	„ 24,18,28,574

PART II.—STATISTICS FOR 1936-37.

(A) *Indian Sugar*—

Sugar produced (Official Forecast 29th April, 1937) 1,072,000 tons.

Ex-Factory price realised* Rs. 6-3-11 per maund.

∴ Value of production Rs. 18,23,00,000.

Sugar produced (as above) 1,072,000 tons.

Average extraction (Official Estimate for 1935-36) 9-29 per cent.

∴ Cane crushed in Factories 11,540,000 tons.

Average delivered price for cane* As. 4-10-7 per maund.

Cost of delivery to Factory* As. 0-7-4 per maund.

∴ Price of cane before delivery As. 4-3-3.

* Actual figures supplied by a typical Factory in Bihar for the season 1936-37.

Cost of cane crushed by Factories before delivery was Rs. 8,39,25,000.

Cost of delivering cane to Factories Rs. 1,21,00,000.

∴ Total value of 1,072,000 tons sugar produced was made up as follows:—

	Per maund.		
	Rs.	Rs.	A. P.
Cost of cane	8,39,25,000	or	2 14 0
Delivery of cane	1,21,00,000	„	0 6 7
Excise	3,92,00,000	„	1 5 6†
Balance for manufacturing, over-head, depreciation and profit	4,70,75,000	„	1 9 10
Total ex-Factory value . .	18,23,00,000	„	6 3 11

† Calculating 25 per cent. as paying Rs. 1-5 per cwt. and 75 per cent. as paying Rs. 2, i.e., an average of Rs. 1-13-3 per cwt. or Rs. 1-5-6 per maund.

(B) *Imported Sugar*—

Sugar imported of Dutch Standard 16 and upwards (Accounts of Sea-borne trade) 23,075 tons.

Value of above (Accounts Sea-borne trade) Rs. 23,90,270.

∴ Average c.i.f. price was Rs. 3-12-11 per maund.

Import duty on the above at Rs. 9-1 per cwt. amounts to Rs. 41,82,340.

∴ Landed value of 23,075 tons imported was made up as follows:—

	Per maund.	
	Rs. A. P.	Rs.
C.i.f. value	3 12 11	or 23,90,270
Customs Duty	6 10 6	,, 41,82,340
Landed value	10 7 5	,, 65,72,610

PART III.—COMPARISON OF STATISTICS FOR THE YEARS 1929-30 AND 1936-37.

(A) *Increases*—

	1929-30.	1936-37.	Increase.
Sugar Produced Tons	89,800	1,072,000	982,200
Value of Sugar Produced . . Rs.	2,31,00,000	18,23,00,000	15,92,00,000
Cane Crushed Tons	990,000	11,540,000*	10,550,000
Value of cane crushed . . Rs.	1,09,50,000	8,39,25,000	7,29,75,000

* Assuming average yield per acre does not exceed 400 maunds and that an acre represents the average area cultivated by a family of 4 to 5 persons (Tariff Board Report, page 42), this quantity provides employment for between 29 and 36 lakhs of persons.

(B) *Decreases*—

Sugar imported Tons	937,662	23,075	914,587
C. i. f. value of sugar imported Rs.	48,50,000	23,90,000	15,24,60,000†

† Balance of total foreign trade in India's favour for the year 1935-36 was Rs. 77,11,00,000 (Accounts of Sea-borne trade) so that reduced imports of sugar represented 19.77 per cent. of this

PART IV.—DECLINE OF SUGAR IMPORTS (ACCOUNTS OF SEA-BORNE TRADE).

Year.	Imports Dutch standard 16 and above.	Decline from previous year.	Decline from 1929-30.
1929-30	937,662	...	...
1930-31	893,404	44,258	44,258
1931-32	515,052	378,352	422,610
1932-33	369,681	145,371	567,981
1933-34	261,299	108,382	676,363
1934-35	222,727	38,572	714,935
1935-36	201,158	21,569	736,504
1936-37	23,075	178,083	914,587

(4) *Letter, dated the 14th July, 1937, from the Muslim Chamber of Commerce, 22, Canning Street, Calcutta.*

Subject:—MARKETING INDIAN SUGAR INDUSTRY.

With reference to your circular letter No. 173, dated the 12th May, 1937, forwarding a copy of the general questionnaire prepared by the Tariff Board in connection with their enquiry into the question of the extent of protection required by the Indian Sugar Industry, I am directed to submit a statement relating to Marketing Section (page 9) of the questionnaire for the consideration of your Board.

Marketing.

83. The principal sugar marketing centres in which members of this Chamber are interested are the following:—

Calcutta, Cawnpore, Bombay, Madras, Cochin, Cuddalore, Cocanada, Calicut, and other stations on Malabar Coast, Karachi and Chittagong.

84. (a) The usual arrangement in the sale of sugar between a manufacturer and dealer are:—

- (1) Sole agent,
- (2) Sole Broker,
- (3) Direct sales on own risks and other risks,
- (4) Contract of different rates.

(b) Dealers and retailers enter into separate contracts.

85. (1) The present form of sugar contract is not suitable as its terms are in favour of seller. We, therefore, suggest that a uniform contract for all mills should be enforced.

(2) Seller's advantages should be counterbalanced with favourable terms given to buyers.

86. Figures and rates of prices are not available.

87. Wide fluctuations do not occur between wholesale and retail prices unless for want of buyers at certain periods a tendency for price fluctuations appears. There should be sufficient margin in wholesale and retail prices.

88. In Calcutta most of the sugar consignments are kept in Port Commissioner's godowns which are made of corrugated iron sheets and do not protect sugar sufficiently from deterioration which is therefore sometimes damaged. It is estimated that from 15 to 25 per cent. of sugar is usually damaged. Similarly, in other parts good arrangements for storage are not made and usually sugar is damaged. Better arrangements of storage is an urgent need.

89. Yes. Indian sugar deteriorates more rapidly than Java sugar but this cannot be said of other imported sugar. There has been slight improvement in keeping quality of Indian Sugar.

90. Java sugar but not other imported sugar is preferred to Indian sugar. The preference is generally by all classes and is mainly due to the superior quality of Java sugar as compared to the Indian which is inferior in quality. Only a few Indian Mills approach Java quality.

91. Java sugar is decidedly superior in quality to Indian Sugar.

The following are the main points that constitute superiority in quality:—

- (a) Cold, heat, moisture do not affect soon.
- (b) Uniform standard of quality in colour, grain, etc., is maintained.

Indian sugar is inferior to Java in the following respects:—

- (a) No uniformity of standard is maintained. Even in one wagon there is difference in different lots in colour, and grain, etc., and

(b) Atmospheric changes affect Indian sugar very soon. These defects are to be removed and Indian sugar should come up to the standard maintained by Java.

92. The sugar manufacturing season is not limited to only $\frac{1}{2}$ of the year, usually it covers a period of six months in the year and the Mills go on manufacturing during half the year:—

(a) During the six months half the quantity produced is consumed. The mills and the dealers carry between them more or less 50 per cent. of the total manufacture. The carrying of stocks is financed mostly by banks and the mill stocks are kept with the bank but generally the Mills keep stocks in their own godowns.

93. A marketing survey of the sugar industry is likely to be of great advantage provided it is done thoroughly and efficiently.

94. A central All-India selling organisation is not favoured by the constituents of this chamber as it is feared that it would tend to impede the natural and free growth of trade.

95. Yes. We are in favour of standardisation of quality of Indian Sugar. The basis of standardisation is suggested as follows:—

- (1) White colour.
- (2) Grain bigger and uniform.
- (3) Weight for one bag 2 maunds 28 seers net.
- (4) Absence of molasses.
- (5) Capacity to withstand atmospheric changes.
- (6) Empty bags A's of 2 lbs. 10 ozs. each should contain 2 maunds 28 seers net weight.

96. (a) & (b) Does not arise.

97. Does not arise.

98. The suggestions for improvement in the marketing in India such as establishment of a futures of terminal market are not calculated to do good at this stage of the development of the industry when other pressing problems are as yet unsolved and no definite improvement has been made in standardisation, etc.

99. The estimate of normal consumption of sugar in India is about 12 lakhs of tons per annum. It also depends on price fluctuations of the market. The possibilities of increasing consumption are the following:—

- (1) General rise in the purchasing capacity of the masses.
- (2) Reduction in price for home consumption.
- (3) Duty free export of sugar to foreign countries.

100. Generally speaking factory sugar has replaced gur in sweetmeat trade to a very large extent, only a very small percentage of gur is still used for making crude and cheap sweets like *Batasa*.

101. If reasonable facilities are forthcoming such subsidiary industries can be organised and they would be welcomed by sugar manufacturing industry.

102. These figures are not available.

103. Yes. The price has been unremunerative. The chief cause was the competitive prices of Indian sugar, but at times when there was shortage of sugar the Java sugar price yielded profit.

104. Except to Burma there has not been any export of Indian sugar by sea nor by land. At present the quality and prices of Java sugar are such that Indian sugar cannot compete with it. But the export trade can be developed if the Government affords protection and levies no duty. Sugar can mainly be exported to Ceylon and other British colonies and some other countries.

105. The sugar export duty of 1934 and particularly the addition made in 1937 has had adverse effect on the development of the industry and was

greatly resented by the interests concerned, but the market conditions have not thereby materially changed.

106. There is no regular system and no marketing arrangement for molasses.

107. Indian molasses are not exported outside the country. But there are possibilities of its export to Bankong, Siam, China and Japan, if conditions are favourable.

(5) *Letter, dated the 15th November, 1937, from the Tariff Board, to the All-India Village Industries Association, 219-D, Bow Bazar Street, 2nd Floor, Calcutta.*

The Indian Sugar Tariff Board during the course of enquiry into the extent of protection required for the Indian Sugar Industry has found it necessary to examine the question of manufacture of gur. It is understood that in parts of Bengal and Orissa gur is manufactured from date palm also. I am to enquire if you have any information on the subject and if so, could you very kindly let me have a note on it giving the approximate outturn of such gur, the areas in which it is manufactured, the process, the cost of manufacture, the price which it fetches and the markets where it is sold? Any other information that you can give with regard to this kind of gur would also be welcome.

A very early reply is requested.

(6) *Letter, dated the 4th December, 1937, from the All-India Village Industries Association, Calcutta.*

I have your letter of the 15th November I am sorry to say that it was not possible to reply to your letter earlier.

In Bengal Date Palm Gur is prepared on an extensive scale in Dacca, Faridpur, Jessore, Khulna and 24-Parganas. It is also prepared in Nadia, Barisal, Howrah, Bankura and Midnapur but not on an extensive scale. In Orissa it is prepared in Balasore district but not in other districts although there are Date Palm trees in Cuttack and other districts. I am sorry I cannot give you any idea as to the amount produced. My estimate about Dacca district is that about fifty thousand maunds are produced annually. Price of Gur varies according to quality and it varies very widely. The average price of ordinary Gur is 2 annas, whereas that of superior quality is 4 annas 5 pies per seer of 80 tolas. The best Gur comes from Manickgunj Sub-Division of Dacca district.

Date Palm juice contains 10 to 15 per cent. Sugar and 6 to 7 seers of the juice gives one seer of Gur containing about 75 to 78 per cent. of Sugar. It contains much higher percentage of organic matter (other than sugar) and of mineral salts than those in Gur prepared from sugarcane juice. The presence of yeast cells in the date palm juice increases its food value.

The cost of manufacture varies from place to place, Rs. 1-8 to Rs. 3 per maund of 82 lbs. A Tapper generally earns Rs. 20 to 25 per mensem best ones even Rs. 40 per mensem during the season. In Bengal the trees are tapped in the winter season. Night juice is used for the preparation of Gur and the day juice is either allowed to run or used for the preparation of very inferior variety of Gur which cannot be easily sold in the market. It is due to the fact that in day time the temperature is higher and so the juice gets fermented. Little addition of lime will prevent that and good gur may be prepared even from day juice.

Process of manufacture.—The juice is boiled generally in earthenware vessels and where it attains a syrupy consistency (just like glycerine) it is stirred with a wooden rod and poured into mould. It becomes solid on cooling. When to stop boiling is to be learnt by little practice. If one sees it for a few days he can pick it up.

Concentrated juice is also sold in a liquid condition. For that when the liquid becomes yellowish brown and syrupy boiling is stopped. It is also taken in another way. When the liquid becomes syrupy instead of stirring with wooden rod it is poured into earthen vessel, which is completely filled with the liquid and covered and is kept in a place. After about a month or two a good portion of the cane sugar crystallises out.

Market.—It is mainly sold in the locality. Good portion also goes to Calcutta and districts and towns and also in the villages of adjoining districts. This Gur is very much liked by the people of Bengal on account of its flavour and therefore the producers find no difficulty in selling it.

Palmyra (Tal) Gur is produced in the Districts of 24-Parganas, Howrah and Midnapur. The best quality comes from Diamond Harbour Sub-Division of 24-Parganas. This also sells very easily at a much higher price than Cane Jaggory. There are plenty of Palmyra trees in several districts of Bengal in some of which I have been trying to introduce it. Palmyra juice also contains 11 to 15 per cent. sugar.

If you want any more information on the subject please let me know. I have dealt with all the points briefly.

(7) *Letter, dated the 18th September, 1937, from the Empire Trade League, 135, Canning Street, Calcutta.*

I am directed by the Committee of the Empire Trade League to put before you the enclosed representation which the League have been called upon to make. Considering the importance which the Sugar Industry has on the economic life of the whole country, and hope that the same will receive the respectful consideration of all the members of your Board and be released for publication in the press for eliciting the opinion of the public in general.

Enclosure.

The Tariff Board which has been constituted with a view to examine the effects of protection afforded to Indian Sugar Industry, and whether in the opinion of the Board, the import duty should be reduced or increased, are now holding its sittings in taking evidences from the sugar interests of the various provinces. From the pronouncements of the Finance Member of the Government of India and also from no less a person than the head of the administration, it appears that the Government is not disposed to continue affording protection to Sugar Industry apparently not from any reason that the consumers stand to suffer but from the reason that there has been a marked falling off in the revenue derived from the custom duty on imported sugar. Instead of there being some such amount as estimated (Rs. 2 crores for the whole year estimated) realised out of the duty, a sum of about Rs. 6,00,000 has been realised in 12 months which represents a fifth of what was budgetted to be derived from the duty in the whole year of 1936-37. This seems to have caused some uneasiness in the minds of the Government, and the formation of the Tariff Board to enquire into the position of the Sugar Industry, and the advantages and disadvantages derived from the policy of protection afforded to it, though in conformity with what was provided for in the Sugar Protection Act of 1932, when the same was enacted, has given serious cause for alarm in the minds of all in the whole country.

Since the Excise Duty on Indian sugar has been brought into existence, the Industry has received a setback, and the Governmental interference in many matters affecting the purchase of sugarcane, and the marketing of the products has not been viewed with any degree of favour by all interested in the industry. The expansion of the industry has since been greatly checked. In addition to the mischief caused by the imposition of the Excise Duty, the industry has immensely suffered owing to the serious internal competition for the securing of the same markets by the principal sugar-manufacturing areas. Besides the want of sympathy

evinced by the Government in many matters, have prejudicially affected the interests of the industry, so much so that those who have staked money in it may be said to be losing. Diffidence has come to pervade the minds of those who were thinking of entering into this industry, and none of the industrialists is hopeful of earning a decent profit in this business. A sense of insecurity has been brought about in the industry owing to the Excise Duty having been suddenly imposed, and a Tariff Board having been instituted to enquire again into the workings of protection to the industry.

But before the Board takes up the question of protection to the Sugar Industry, it is urgently requested that it surveys again the objects for which protection was afforded to the industry, and whether those objects have been fulfilled or are in the way of being fulfilled and whether the Government has acted in such a way as to enable the industry to fulfil the objects for which protection was granted to the industry. Was it that protection was granted to the industry with the object that Java sugar would continue to flow unchecked bringing into the coffers of the Government a fixed revenue in the form of import duty? Protection has performed one principal function, namely this that it has checked the heavy inflow of foreign sugar into the country. Protection has allowed many economies to be made in the costs of manufacture bringing about a lowering of the prices in spite of the excise duty, and in spite of Government having rendered no substantial help by way of imparting adequate scientific knowledge for the growing of better sugarcane crop, etc. The Government therefore will not be at all justified in crying down protection now being enjoyed by the Industry, and will be making a serious blunder if it makes an attempt to lessen the present rate of the import duty on sugar, or to increase the present rate of the excise duty on Indian factory-made sugar. The Government cannot do either of the two, protect the Indian Sugar Industry, and at the same time enjoy a revenue from the receipts of import duty on sugar. The bonafideness of the Government is bound to be seriously questioned if it departs now from the path it has already chalked out.

The loss of revenue from the import duty on sugar should not set the Government think seriously. If there has been a loss from this source, the Government has also got to consider what compensating effect the excise duty has upon it. Is this increased revenue derived from excise duty not sufficient to make good the loss suffered from a falling off in the revenue from import duty? Taking the consumption figure to be constant, the loss on imports may be set against the gain in the consumption of the Indian factory-made sugar. With the depreciation in price, the consumption has increased. Therefore practically the whole loss from a falling off in the revenue from import duty is bound to be compensated by the receipt of a large revenue from excise duty. The figures of revenue from the last source derived in 1934-35 and in 1935-36 will certainly support this our contention. In fact the Government have nothing to fear from the loss of revenue from import duty which is bound to be less with the expansion and improvement of the Indian Sugar Industry as an effect of its enjoying adequate protection at the hands of the Government.

The Tariff Board has also got to consider whether protection has been fully taken advantage of by the Industry and whether the same instead of imposing a burden on the consumer has done everything possible to secure his best interests, to help the country to get out from the economic quagmire, to relieve unemployment, and to improve the condition of the rural India, and in short to build up an industry which India may justly be well proud of by creating happy link between urban and rural India which every other industry has sought to disturb.

Much capital is made out of this that India being an old country, with its soil fearfully exhausted for centuries by being cultivated without any let or hindrance, is not one which can compare well with Java,

Mauritius or any such country in productivity, specially of sugarcane. But it should not do well to forget the historic fact that India is the home of sugarcane. It is in India in many of her districts that sugarcane may be cultivated to yield the most satisfactory results. Both in the quantity produced per acre and in sugar recovery percentage, India yields to Java. Science can do much to effect a lot of improvement, and the diffusion of scientific and technical knowledge as regards the kind of sugarcane to be planted in any particular area, the kind of manure to be used, the knowledge of warding off sugarcane pests and diseases, the prevention of sugarcane from producing invert sugar through fermentation, quick and cheap transit facilities, both of sugarcane and the manufactured product, etc., all rest upon the Government, and it is the Government which is to be held responsible if it has failed in its duty. All who are connected with the agricultural and manufacturing sides of the industry are not to be found fault with if they lack the knowledge which modern science has brought for the improvement of the Indian sugarcane both as regards its quality and productivity. They may be said to have done and are doing all that is humanly possible to effect improvements in each branch of the industry.

The price of Indian sugar has come down roughly from Rs. 10 to Rs. 7 per maund from the time its manufacture on a large and modern scale has been started with the passing of the Sugar Protection Act, taking into account the fact that there has been imposed an excise duty in the meantime. This goes abundantly to prove that considerable economies in the costs of manufacture of Indian sugar have been effected much to the interests of the consumers, and the manufacturers have not been idle to take the fullest advantage of protection afforded to the industry. If the duration over which that protection is to remain is extended for a fairly long period, Indian Sugar Industry is sure to stand on its own legs, and the whole country to become independent of foreign supplies. The gulf between the average prices of Java and Indian sugar has been much wider than what it was a few years ago, and the same will continue to be wider when the Indian industry is assured of a secure position which protection for a long period can guarantee. It will be nothing short of stubborn folly and wanton obstinacy to disallow the claim for protection to the Indian Sugar Industry on the alleged ground that the Industry has made no progress during the short term of protection it has enjoyed though the effects of that protection have been very much curtailed by the imposition of the much condemned excise duty.

The members of the Tariff Board whoever they may be, will not forget that by the grant of protection to the Indian Sugar Industry, no imperial interests have been put to jeopardy. India is a unit of the British Commonwealth of Nations. The imperial interests do not sustain any loss by the grant of protection to Sugar Industry of India, as they do by the grant of protection to Indian Cotton Industry. It is really unthinkable how the protection to Sugar Industry has come to be an eye-sore to the British imperialists, when none of the British interests stands to suffer thereby.

Protection to Indian Sugar Industry has got to be given unstinted support owing to the reason that it is a purely indigenous industry, and has justly been called a "National Industry". It has been built up by almost cent. per cent. Indian capital. All the workers are Indian. The creation of the Industry on a modern scale has done much to relieve unemployment among all sections of the people. The agricultural population has received real benefits by taking to sugarcane plantation being assured of a sure and steady market near to their own areas. The advantages which the Industry has conferred on the whole country are too many to need mention, and they ought not to be lightly thought of in formulating any scheme for the regulation of the Industry.

If the consumer is said to be penalised for the protection afforded to the Sugar Industry, cannot the same thing be said of him on account

of other industries enjoying a similar measure of protection? No case can be made out in the interests of the consumer only with regard to protection afforded to the Sugar Industry. If he is to be relieved from paying a high price for sugar he consumes, why should he not get the same kind of relief from paying higher prices for many other necessities of life which he is forced to pay on account of protection afforded to their manufacture in this country?

In our opinion the Sugar Industry of India deserves the heartiest support of the Government by all means, and we beg to state with all the emphasis at our command that no other industry is in need of protection so urgently as the Sugar Industry, as it has proved to be of inestimable benefit to all classes of people in India, the prosperity and decline of which are linked up with those of the whole country.

(8) *Letter, dated the 23rd June, 1937, from the Bengal Industries Association, 15, Clive Street, Calcutta.*

Regarding the questionnaire issued by the Tariff Board in connection with the enquiry on Sugar Tariff, I am directed by the Committee of this Association to communicate to you the following replies to those questions on which the Committee feels itself to be in a position to give definite suggestions and informations:—

99. (i) Consumption of sugar can be largely increased if it is made cheaper by reducing the excessive protective duty. Though it is one of the necessities of life, the demand for sugar is elastic in India, for the people are poor, and there is a cheaper substitute, gur, to take the place of sugar when prices are prohibitive. It is significant that with the increased home production of sugar, since 1930-31 the production of gur also has rapidly increased. The calculated net production of gur for direct consumption in India is estimated at 4,372,000 tons for 1936-37 being almost double the corresponding figure of 224,500 tons for 1930-31. This expansion in the production of gur seems to indicate that gur is being extensively used as a substitute for sugar. Much of the demand for gur can be converted into that for sugar if the price of sugar can be brought down to a more popular level.

(ii) By giving trade facilities and Tariff concessions to the confectionery industry of India and particularly of Bengal, consumption of sugar in this country can be greatly increased. Direct consumption of sugar is comparatively very small in India. By far a larger fraction of the total consumption of sugar is used by the confectioners for productive purposes. Hence, a greater expansion and development of confectionery industry will go a long way to promote the demand for sugar. The rapid increase in the production of gur and sugar at the same time clearly shows that India has vast capacities for sugar consumption, both direct and productive. Proper encouragement to existing industries that use sugar as a raw material will create a more intensive home market. In this connection, the question of granting bounty and Tariff concessions to the sweetmeat makers of Bengal naturally comes up for consideration and is a case in point. In a previous memorandum submitted by this Association to the Tariff Board, recommendations were made that recognised makers of Indian sweets in Bengal should be granted reasonable Tariff concessions to which they are justly entitled as producers and as the biggest consumers of sugar. The Committee of this Association is convinced that if the recommendations suggested are accepted and given effect to, it will open a new channel for the steady consumption of sugar.

Sweetmeat making in Bengal is one of the most successful indigenous industries, full of economic importance and possibilities. Throughout the whole of India, Bengal sweets enjoy a reputation all their own, and the rare excellence of Bengal sweetmeats like the Sandesh and Rungolla,

is appreciated even by Europeans in India. Though the ignorant confectioners of Bengal have so long been entirely left to their own resources, they have nevertheless succeeded in extending their business outside Bengal. In the peculiar technical skill in preparing certain kinds of sweetmeats, the Bengalee confectioners stand unrivalled in India. A few enterprising firms of Calcutta have their regular customers in all parts of India and occasionally they have to export their products to Burma and even to Egypt. There are brilliant possibilities of Indian confectionery lying that way. Considering the comparative superiority of Bengal sweets, it is certainly not idle to hope that if Bengal sweetmeats can be placed in the continental and other foreign markets they will easily become one of the most relished sweetmeats in the world. Given proper facilities the confectionery industry of Bengal has a vast field of development and expansion not only in India but also in markets overseas. But such expansion is hardly possible unless the manufacturers are backed by the State in all possible ways particularly by granting Tariff concession to manufacturers so that their cost of production may become low enough for wider industrial development. Protection is a great impediment not only to the prospect of industrial enterprises on an international scale but also to the less pretentious endeavours of broadening the home market. The definite recommendations of this Committee on this matter are:—

- (a) Recognised manufacturers of Indian sweets in Bengal as well as other confectioners should be granted bounty and allowed to import duty free sugar.
- (b) Various trade and transport facilities should be given to the confectionery industry for the expansion of business in India as well as in foreign countries.
- (c) Department of industries should carry on a keen research in order to explore the possibilities of this industry and also for the improved and more scientific production of sweetmeats of various kinds.

100. In the absence of reliable statistics the Committee finds it difficult to make any definite statement. The increased production of gur seems to indicate that sugar has not been able to displace gur from the sweetmeat trade, to any considerable extent. In the manufacture of high class delicacies in Bengal, white factory sugar is of course a necessity, but the high price of sugar naturally keeps away the numerous poor village sweetmeat traders from using it as a basic material.

101. Being linked with the Question 99 dealt above, we think we have already expressed our opinion on this point. Subsidiary industries can thrive only when the raw material on which they are based, is very cheap. If the price of sugar is artificially kept as high as it is now, the manufacturers of sweets and syrups, etc., can hardly be expected to make any profit. The Committee, therefore, thinks that the first condition of starting subsidiary industries, is the removal of protective tariff on sugar.

108. That the protective duty has quickened the growth of sugar industry in India, is a fact that cannot be denied. In 1935-36 there were 137 sugar factories working in India against only 29 in 1930-31 excluding refineries. This quick flow of vast capital into this line shows that the industry has been a lucrative one. Though this industry has been giving fat profits to its owners, it is doubtful whether the sugar manufacturers of India have utilised the protection in the way they should. If the protection was given to the infant sugar industry of India with the purpose of giving it some time to grow up, get equipped and gather sufficient strength to compete with foreign sugar when the period of protection would be over, then we may safely say that the purpose has not been served. Very few of the manufacturers have equipped themselves with the most up-to-date machineries, while none has been able to utilise the by-products very successfully. Most of them are lacking in modern scientific

methods of production, but the artificial high price of sugar is giving them a good profit, so that they hardly feel any necessity to stir themselves for any improvement in their methods of production. The sugar industry should no longer be kept in the glass-case of a high protective duty far from all harm's way, but should sometimes be allowed to come in contact with the realities of competition against the world outside.

I have been directed by the Committee to request you to kindly read this communication together with the previous memorandum sent by this Association to you.

I am also to request you to excuse us both for the delay in sending the reply, and also for our inability to send the required number of copies.

(9) *Letter, dated the 18th May, 1937, from the All-Bengal Modak Association, 37, College Street, Calcutta.*

I have been directed by our Association to submit the following representation to your Board, on behalf of our "Modak" community in Bengal.

Our Association, established in 1933, represents the majority members of the different sects of the "Modak" community in Bengal, who from time immemorial, follow the professions of the (1) Manufacture of so-called country-sugar by indigenous process, and (2) manufacture of Indian sweets. According to the social customs of the province, these two important professions have been allotted to our community in by-gone ages, by the makers of the caste-system. Though in recent times, some have given up their ancestral professions, the majority of our community still find employment in them.

In the last session of the All-Bengal Modak Conference, under the presidentship of Mr. S. N. Modak, M.A., (Cal.), B.A. (Cant.), Bar-at-law, I.C.S., the following resolutions were passed unanimously:—

- (a) That the Protection Tariff on all imported sugar should be maintained as at present, and be not reduced even in the slightest degree.
- (b) That the present excise duty on sugar should not be reduced.
- (c) That those who manufacture so-called country-sugar from "gur" by the use of mechanical power, should be totally exempted from the application of sugar excise duty, even if they employ 20 or more workers in the process of manufacture.

Our Association requests the Tariff Board to consider the above-mentioned resolutions favourably, to safeguard the interest of those "Modaks", who manufacture country-sugar from "gur", in the districts of 24-Parganas, Nuddia, Jessore, Khulna, Murshidabad, Burdwan, etc. The manufacturers of the so-called country-sugar were once the foremost of our industrial community, till the import of foreign sugar and lately the competition from Indian factory-sugar has nearly ruined them. If not granted proper protection from competition of imported foreign sugar as well as Indian factory-sugar, our poor community, having no other professions to follow, nor well-represented in services, will die of starvation and unemployment.

Our Association also beg to point out that, the "Modak" manufacturers of Indian sweets are in no way prejudiced against the above-mentioned resolutions of our conference, which they support unanimously and wholeheartedly. The protection tariff and the excise duty, though artificially increasing the market of sugar higher, do not interfere with the industry of sweets. The market of sweets depends chiefly on the supply of milk and its other preparations, and sugar, though an important factor in the preparation of sweets, has to do little with the market rates of sweets, as sugar is sold several times cheaper than milk preparations.

(10) *Letter, dated the 1st May, 1937, from the Sugar Manufacturers' Association, Kotechandpur, Jessore.*

We beg to submit the following representation to your board, on behalf of the sugar manufacturers of Kotechandpur in the district of Jessore, Bengal.

The cultivation and manufacture of sugar was once the most important industry of Jessore. In his "Report on the district of Jessore, its antiquity, its history and commerce" (Bengal Government publication, 1874), Mr. J. Westland writes:—"Sugar trade is a source of great wealth to the district. The outturn of the district is roughly four lakhs of maunds and is worth about Rs. 25,00,000, the whole trading profit distributed among Rayats . . .". Though great impetus was given to the industry with the advent of European merchants, who began to set up in the district, factories with English machineries during the first half of the 19th century, its history dates back to older times. In a statistical table prepared in 1791 by the Collector of Jessore, we find, it recorded, 70,000 Mds. was the annual produce of sugar cultivation.

We need not go into the details of the crude old method of the indigenous process of manufacture, to be seen even now in some of the surviving refineries of Kotechandpur. Two grades of sugar, called "Pucca" and "Dolua", are produced by this process. The sugar produced is dirty and of a very poor quality. Not only does it carry with it the dirt, that is originally in the "gur" from which it is manufactured, fresh dirt is imported during the clumsy process of manufacture. Of the two grades mentioned above "Pucca" sugar is used to be exported to Europe and "Dolua" sugar consumed locally. European factories also used to purchase "Dolua" and produce white crystalline sugar out of this "Dolua" for export to Europe. But with the changed condition of European market, owing to increased competition from extending and prosperous Mauritius cultivation, foreign demand for white sugar manufactured by Europeans as also country-made "Pucca" sugar declined. The result was that along with the European factories most of the refineries in the southern part of the district, which produced "Pucca" sugar, closed down by the end of the 19th century. But in spite of failure of the European factories demand for "Dolua", specially from eastern districts, began to grow and "Dolua" producing refineries, as those Kotechandpur, continued to flourish and prosper. From a statistical return of the exports from Kotechandpur, prepared by the Eastern Bengal Railway at about this time, it is found that Kotechandpur alone was responsible for the export of about 200,000 Mds. of "Dolua" sugar. Then the situation somewhat deteriorated by the influx of bounty-fed Beet sugar from Germany, but it improved when Lord Curzon imposed countervailing duty on Beet sugar. The debacle came with the flooding of the Indian market by Java sugar. The old country-method could not possibly compete with vastly improved scientific method of Java cultivation. The result was that, Java could place in the market, highly better stuff at comparatively cheaper rate, and gradually drove away the indigenous sugar from the market. The old refineries of the district began to close down. At Kotechandpur, which at one time possessed about 125 refineries of this type, the number came down to 35, and their condition was deplorable. When the great European war broke out, the sugar famine that followed, gave an artificial stimulus to the decaying industry. But at the close of the war, with the return of normal condition to the world market, the old stagnation again set in and the refineries of Kotechandpur began to close down. At present, only 8 of them survive as relics of by-gone ages.

The present condition of this old industry is, as described above, far from satisfactory. The days of indigenous system are gone. These refineries are closing down as they have practically no market for their coarse product in these days of cheap refined sugar. The recent Tariff-wall against imported sugar, which ushered an era of boon in Indian sugar

industry, encouraged some old refineries of Kotechandpur to introduce improved methods of manufacture and several centrifugal factories have been started at Kotechandpur. They are centrifuging both Date and Cane Gur, they buy from the cultivators. Though the quality of the sugar is far from satisfactory, because of the low quality of the gur, a good local market has been created for this sugar. Better result could of course be obtained if the manufacturer could produce his own "gur" as suggested by Mr. Petterson (Agricultural Engineer, Government of Bengal), with improved methods devised by the department of Agriculture. In view of recent extension in cane cultivation in the district, the setting up of small Open-pan factories of departmental type, in places like Kotechandpur, where people have got tradition for manufacturing sugar, seems to be a practical proposal. But such Open-pan factories cannot be profitable after paying sugar excise duty, that has been imposed upon Khandsari sugar, as the advantage such factory would get over simple centrifugal factories by producing better quality sugar, would be more than counterbalanced by the excise duty it will have to pay. A small centrifugal factory (as at present) generally works with 15 or 16 workers, whereas the Open-pan factory will have to engage many more operatives to handle its crushing-plant, rab-furnace, etc., and as such will come under the purview of the Sugar Excise Duty Act. Even the centrifugal factories that are working at Kotechandpur, cannot increase their volume of work, because of this excise duty, which has taken away the benefit of the present Protection Tariff from the age-old industry of the district. Its importance to the welfare of the district cannot be questioned. The present deplorable condition of the industry has brought in its wake terrible consequences to the people. The much-talked-of prosperity of the sugar tract of Jessore is gone. There is no possibility of big Vacuum-pan factory being started within the district in near future. If such small centrifugal factories that have been started at Kotechandpur, cannot grow owing to adverse condition stated above, the ryots all over the district would find it hard to dispose of the "gur" they produce. Moreover these centrifugal factories consume "Date-Gur" produced in the district; "Date" cultivation will be wiped out of existence if cultivators lose this market of their product. The Palmyrah industry of Madras has been exempted from the operation of the sugar excise duty, but unfortunately no such preferential treatment has been given to the old industry of Kotechandpur, which also manufacture sugar from "Date-Gur".

Under the circumstances we are praying that your board will kindly recommend to the Government of India—

- (1) That the present Tariff on all imported sugar be maintained.
- (2) Excise duty on Khandsari or Open-pan sugar be abolished, such step will greatly help the growth of small-scale industries throughout the country and will go a long way to solve middle-class unemployment.
- (3) At least the centrifugal factories of Kotechandpur which consume considerable portion of "Date-Gur" produced in the district, be exempted from the operation of the sugar excise duty.

(11) *Letter, dated the 2nd November, 1937, from the Indian Molasses Company, Limited, Calcutta.*

I very much regret the delay in forwarding to you information regarding percentages of sugar and molasses recoverable from cane in Java. The source of my information was not available when I wrote and has just returned to Java.

The figures are somewhat vague but it is generally understood that the percentages of sugar is between 11 and 12 per cent. and molasses runs from 3½-4 per cent. It is further stated that there are some instances

where the figures are a little higher or lower but the above percentages are said to be a fair average.

(12) *Letter, dated the 26th April, 1937, from the Bihar Planters' Cane Growers' Association, Motihari, Champaran.*

With reference to the communique issued by you regarding an enquiry as to the protection for the sugar industry, I have the honour to forward a memorandum from my Association.

I am directed to inform you that a member of this Association will be prepared to give evidence before the Board.
Enclosure.

MEMORANDUM OF THE BIHAR PLANTERS' CANE GROWERS' ASSOCIATION.

Members of this Association, besides being big growers of sugarcane, are landlords, or occupy the position of landlords, of a very large number of small cultivators over the whole of North Bihar. These cultivators have no organisation of any sort to look after their interests, but our interests both as growers of sugarcane and as landlords are identical with theirs.

We consider that the agricultural aspect of the case for protection is the most important. The cultivation of sugarcane has become the principal cash crop to the cultivators of North Bihar and gives employment to thousands, and to reduce the tariff to a level that the factories would be unable to pay an economic price for sugarcane, would be a disaster. Although the growers have not received the price contemplated as a fair one for their sugarcane as laid down in the report of the Tariff Board, and that received has left a very small margin of profit, the reason for the increased area under sugarcane cultivation is almost entirely due to the fall in prices of other agricultural products also due to the fact that sugarcane can withstand floods better than other crops, and this is the case in Bihar where large tracts of country are more liable to inundation since the earthquake.

Protection for 1938 to 1946 should ensure that the grower gets a minimum of As. 5-6 per maund for his sugarcane over this period, this price includes the cost of cartage. This figure is considerably lower than that given to the Tariff Board by the Bihar and Orissa Government in 1930, due to the lower cost of seed and manure and to the slightly increased outturn per acre.

The above figures refer to small cultivators, but it may be pointed out here that the cost to bigger growers such as planters is the same, as although they obtain a higher yield their costs are proportionately greater.

It is necessary to emphasise that whatever protection may be granted, the interest of the growers should be protected so that any additional taxation such as excise should not be passed on entirely to the growers who have no organisation to represent their interests.

(13) *Reply to General Questionnaire of the Indian Tariff Board by the Bihar Planters' Cane Growers' Association.*

11. (a) 60,000 acres.

(b) Members of the Bihar Planters' Association and Bihar Planters' Cane Growers' Association produce annually about 60 lakhs maunds of sugarcane from about 15,000 acres.

(c) Co. 213, 210, 214, 299, 331, 313, 326, 285, 301, 312. P.O.T. 2878 and 2883.

(d) Lands are kept fallow from April until June when hemp or other green manures are sown, which are ploughed in during July or August, and kept fallow until planting of cane in February. At time of planting oilcake (Castor or mustard) with superphosphates or nicifos are used.

(f) Outturn and costs per acre of average big cultivator (i.e., such as a planter).

	Rs.	Rs. A.
400 maunds at As. 5-6		137 8
Cultivation	39	
Manures	15	
Carting	25	
Rent	10	
	—	89 0
Profit		48 8

15. Damage from frost is negligible. The borer pest is prevalent and as entirely due to climatic conditions.

20. Outturn and cost per acre of average cultivator (i.e., a raiyat).

	Rs.	Rs.
240 maunds per acre at As. 5-6		85
Cost of cultivation	20	
Manures	6	
Carting	15	
Rent	6	
	—	47
Profit		38

22. (b) Any form of zoning would undoubtedly be advantageous to the factories as they would be protected against competition for cane in the areas in their vicinity but, from the growers' point of view, it would be disastrous as they would be placed completely at the mercy of the factories. Competition between the factories is the only safeguard which the cultivator possesses for the maintenance of cane rates. This has been proved in past years when there has been a shortage of cane. To deprive the grower of this safeguard would be most unfair and he would be liable to victimisation by an unscrupulous factory.

Under any form of zoning the Government minimum price for cane would become the maximum price.

29. Transport of cane by cart is for over 6 to 8 miles 1½ pie per maund per mile, but for distances under that the cost is proportionately higher.

Cane growers both employ their own carts and hired carts. For hired carts the cost is as mentioned above.

34. The view is held that freight on manures, coal and limestone could well be reduced.

48. The fixation of a minimum price should bear some relation to the sugar content of the cane during each month of the crushing season. Under the present rules the minimum price of sugarcane at the beginning of the crushing season is based on the previous seasons' sugar quotations, when stocks are low and prices higher. For this reason the mills in Tirhut this year did not start crushing until December and this is one of the reasons for the large amount of surplus cane. The factories deliberately delayed crushing and were given a concession rate to crush the cane in April which they could have crushed in November.

A lower scale should be fixed at the commencement of the season when the sugar content of the cane is lower, and, in years when there is a full crop, it should be made obligatory for the factories to start crushing.

the first week in November. The scale should be increased as the sugar content improves.

49. Under the present Act a minimum price is fixed for cane without any regard to its quality and this has been the greatest handicap to the factories and also unfair to cultivators who produce good quality cane. Since the earthquake large tracts in North Bihar have been more liable to inundation than previously, and, as sugarcane can withstand flooding better than other crops, a large proportion of the increased area is grown in such lands. The result has naturally been deterioration in the quality of the cane crop. Under the present Government rules the factories have to pay the same price for this cane, which possibly has been standing in water for two months, as for good quality cane grown under the best conditions.

Incidentally the fixation of one minimum price for cane is also responsible for taking away any inducement to the cultivator to improve the quality of his cane.

If mills wish to continue their season beyond 30th April, growers should receive some compensation for dryage and damage to the crop.

51. There are possibilities of extending the crushing season by the introduction of early ripening varieties but it is doubtful if it would be profitable to the cultivator to grow any variety which would be harvested after the 30th April.

52. The Imperial Council of Agricultural Research has during the last five years been carrying on sugarcane research work in North Bihar. This research work has now been extended for another 3 years, and is now being carried on at Pusa. It was formerly being done at Mosheri, where useful results have been obtained.

The major part of the work of the Agricultural Department is propaganda on sugarcane. Due to the department's work and to the assistance given by Planters Co. 213 and Co. 210 are now being grown practically to the exclusion of all indigenous varieties.

Recently owing to a grant from the Sugar Excise Fund the Department has been able to appoint a number of Assistant Directors of Agriculture, Overseers and Kamdars for demonstration purposes.

Although the Department is working on the right lines a lot more can and ought to be done. Too much stress cannot be laid on the necessity of extensive and intensive work on the agricultural aspect of the sugar industry, in particular the starting of seed nurseries. Government of India realise about a crore of rupees as Sugar Excise from sugar produced in Bihar and they should not grudge giving 5 or 6 lakhs a year for intensive work which will improve the per acre yield and quality of cane.

65. Lack of storage facilities is one of the chief causes of the present low prices of sugar. Mills not having sufficient storage room are compelled to sell their sugar early in the year instead of carrying stocks over the whole year. As the minimum price of cane is based on the price of sugar, this reacts unfairly on the grower.

Marketing.

83-89. Among the causes of low prices of sugar is the lack of an adequate marketing organisation.

92. The normal manufacturing season in North Bihar is approximately 5½ months and not one-third of the year.

93. A marketing survey of the sugar industry would be advantageous. The question of fixing a minimum price for sugar as well as for cane should be considered.

106. The effect of (i) the Sugar Excise Duty of 1934 was partly borne by the grower and (ii) the addition in 1937 was borne entirely by the grower.

109. Protection for 1938 to 1946 should ensure that the grower gets a minimum of As. 5-6 per maund for his sugarcane over this period, this price includes the cost of cartage. The figure is considerably lower than that given to the Tariff Board by the Bihar and Orissa Government in 1930, due to the lower cost of seed and manure and to the slightly increased outturn per acre.

The above figures refer to small cultivators, but it may be pointed out here that the cost to bigger growers such as planters is the same, as although they obtain a higher yield their costs are proportionately greater.

It is necessary to emphasise that whatever protection may be granted, the interest of the growers should be protected so that any additional taxation such as Excise should not be passed on entirely to the growers who have no organisation to represent their interests.

110. Restriction of overproduction is essential. Increased production must coincide with increased consumption.

As India does now produce all the sugar consumed in India the import of foreign sugar should be prohibited.

(14) *Letter, dated the 12st June, 1937, from the Convener of the Sub-Committee appointed by the Bihar Provincial Congress Working Committee, Patna.*

I have the honour to enclose herewith replies to some of your questions drafted by a sub-committee appointed for the purpose by the working committee of the Bihar Provincial Congress Committee. The questions selected are those which touch the growers. If you require verbal evidence in support of the replies aforesaid, I shall move the provincial working committee for selecting witnesses for appearing before the Board.

Enclosure.

ANSWERS BY THE WORKING COMMITTEE OF THE BIHAR PROVINCIAL CONGRESS COMMITTEE TO THE QUESTIONNAIRE OF THE TARIFF BOARD.

15. Not much damage is done to the cane from frost but on an average 5 to 10 per cent. damage is caused by the diseases and insect pests.

17. With the exception of the last season generally in the end of the season the supply of cane begins to fall short of daily demand of the mills and thus there is competition between the mills to purchase cane and the prices go up from As. 5 to As. 8 per maund and on some days even more.

18. (a) Everywhere the area under cane cultivation has been on the increase every year.

(b) The cause of the increase is due to the cultivators getting ready cash for their canes and fall of prices of other staple crops specially paddy.

(i) The climatic condition and excess and defect in rainfall will not affect or vary the cane cultivation in the sense if there is excess or scanty rainfall in any particular year it will not discourage the cultivator from continuing the cane cultivation though it does affect the production.

(ii) The prices obtainable for sugar will affect cane cultivation as it has done this year. Due to fall in price of sugar the price of cane has gone down and consequently it has discouraged the cultivators to reduce their cane cultivation. Not more than 40 per cent. of new plantation has been done as compared with last year.

The cultivators have not uprooted much of their ratoon crop which luckily may supply the demand of the mills in 1937-38.

(iii) Similarly the fall in price of gur, jaggery will effect the cane cultivation. If the price of the cane fall below As. 5 per maund and the price of other alternative cash crop and staple crops go up to a par with the price of cane which takes more labour and attention to other crops.

19. The production of sugarcane this year has been highest and much more than the demands of the mill. The propaganda egged on by the mills should be put a stop by the mills and the Government when they find that area under cane cultivation is sufficient to meet their demand. Both the millers and the Government should propagate and encourage intensive cultivation rather than extensive cultivation. Efforts should be made to improve the yield rather than increase the area of the cultivation of sugarcane.

There should be sufficient propaganda to encourage the cultivators to take to new method of cultivation.

Cost of cultivation of first crop for one acre yielding from 200 to 250 Mds.

	Rs. A.
Digging 20 men at As. 3 per man	3 12
Ploughing, harrowing three times—24 ploughs at 3 ploughs per rupee	8 0
Seeds 40 maunds at As. 4 per maund	10 0
Opening furrows, for planting cane, covering shade with shade, showing, cutting cane into small pieces—	
3 ploughs	1 0
6 labourers at As. 4 each	1 8
	— 2 8
Manuring 10 carts at As. 8 per cart	5 0
Hoeing 3 times 24 men at As. 3	4 8
Caretaker for six months at Re. 1 per mensem	6 0
Cutting cane for supply to the factories, removing roots and tops and clearing leaves, at 1½ pice per maund for 200 maunds	4 11
Rent for about 2 years	6 0
	— 50 7
Interest at Rs. 12 and at ½ per cent.	6 4
Cartage for reaching the canes to the factory at the rate of one anna per maund for 200 maunds	12 8
Interest on the value of land for Rs. 125 per acre at Rs. 12½ per cent. for 2 years	31 4
	—
Total	100 7

In South Bihar the rent is Rs. 10 and the irrigation charges is Rs. 1¼ for 2 years.

If an acre actually yields 250 maunds it will never be the same quantity when weighed in the mills. One can safely reduce it by 10 per

cent. as driage and inaccurate weighment. This also includes chewing and subscriptions in kind.

Ratoon.	From 100 to 150 maunds.
	Rs. A. P.
Hoeing 2 times—20 men at As. 3 per man	3 12 0
Interest at $12\frac{1}{2}$ per cent.	0 7 6
Rent	3 0 0
Cutting cane for supply to the factory, removing roots and tops and clearing leaves at 6 pies per maund for 150 maunds	4 11 0
Caretaker for six months	6 0 0
Carting one anna per maund per mile for 150 maunds	9 6 0
Total	<hr/> 27 4 6 <hr/>

This does not include inaccurate weighment, Salami to the Agents of the mills and those who issue the Purjis and irrigation charges.

21. The main difficulties of cane growers are as follows:—

- (a) The extreme poverty of the agriculturists.
- (b) Their inability (for want of funds) to do the cane cultivation on improved methods. For want of funds they are unable to maintain new type of ploughs and good and strong bullocks.
- (c) Insufficient manuring. In many cases there is no manuring at all.
- (d) Some mills do advance loans mostly on interest but they are not sufficient even to meet the cost of cultivation, let alone other expenditure such as purchase of bullocks, ploughs, manures, etc. The advance is Rs. 10 to 25 per acre. The cultivators who cultivate cane only have to purchase their food crop by taking loans from Mahajans at a high rate of interest. The cane crop occupy the land for about 2 years from start to finish. As soon as they get the price of the cane they have to pay back their loans by instalment. Their position in the end is no better than a daily wage-earner in some cases it is worse.

Improper and irregular distribution of Purjis by contractors and Gumashtas and demand of money for the issue of Purjis.

- (e) Difficulty of timely weighment of canes and detention of the carts both at mill gates and Railway Stations. There is no arrangement of fodder, water and shelter resulting in great inconvenience and discomfort specially during the cold winter nights, sun and rain.
- (f) Taking up mostly unbonded canes in preference to bonded canes which are made to wait till unbonded canes are not available.

The agents who have contract of canes and have also their own canes try to supply their canes in preference to the contracted canes. Deduction of six pies in a rupee by most agents at the time of making payments.

Payment of price after unnecessary delay.

- (g) Bad cart roads, no culverts and bridges on rivers and rivulets.
- (h) In most mills the carts have to take the cane to the cane carrier and wagons to unload it and are not relieved till they put their cane on the carrier or in the wagons at the stations.

(i) Ignorance of cultivators to use modern methods and proper way of preparing and cultivating lands.

We suggest that agency system should be abolished wherever possible and each mill should deal direct with the cultivators. We would suggest the sugar factory should enter into direct contract for supply of cane with the cultivators and they should pay the price direct to the cultivators. There is not much chance of the mal-practice, if relations are direct, as it will not be in the interest of the mills not to pay the full price fixed and thus expose themselves to the risk of losing the good will of the cultivators. Each sugar mill should maintain a competent officer, who may be designated as "pay master" with a small staff under him. The pay master should maintain a register of each cultivator who has entered into a contract either direct or through an agent, where agents are unavoidable for the supply of the canes to their mills. Each of the cultivator should be provided with Pass Book like the one maintained by the Post Office Savings Bank. This Pass Book should bear the stamp of the mill, be signed by the Manager, and the respective agents if any. In the Pass Books, the names of the cultivators, their father's name, name of the village, plot No. and the quantity of cane to be supplied should be entered. The Pass Book should be properly filled by the mill authorities or in the agent office mentioning the number of Purjis and quantity of cane supplied by the cultivator during the week and full price of that cane. After the preparation of the Pass Book it should be signed by the cane Superintendent or by the agent. The cultivator may take the Pass Book to the Pay Master, who on verifications may make the payment to the cultivators and enter the amount so paid. This will also serve as a check against unfair distribution of Purjis to the highest bidder first so far as their *Dasturis* is concerned.

Each mill should maintain a department to do this work. They should also maintain a chart giving the name of each cultivator, the area cultivated by him and the amount of cane contracted to be supplied. The Purjis should be distributed according to the chart so that if each cultivator should get this purjis according to his term and quantity to be supplied. Wherever agents are unavoidable charts system should be introduced and both the mill authorities and Government Inspector should see that the Purjis are equitably distributed. In case of default there should be a provision for punishment by imposition of fine or cancellation of the contract. Further it would improve matters if agreement entered into between the mill and grower stipulate the quantity of cane which must be taken during each month of the season.

The payment of price in all cases should be made by the mills direct and not through the agents. Apart from the cane inspector, representative of the cane growers should be allowed to attend the weighbridges at the time of weighment and no difficulty whatsoever should be put in their way. Each mill should appoint a committee consisting of 2 representatives of the cane-growers to be elected by the growers of the area, two nominees of the mill and the fifth man to be nominated by the District Magistrate or by the Sub-Divisional Officers. This committee should look to the general complaint of the cultivators and mills and try to settle them.

There should be sufficient number of weighbridges in the mills for speedy weighment and disposal of the cart. This will prevent detention of carts for a very long period. No weighbridges should be allowed near the cane carrier as it prevents the Inspecting Officers from deducting the wrongly weighed carts.

22. (a) We find many sugar mills are trying their best to acquire as much land as possible to bring them under their own cane cultivation. If this is allowed to go on it is quite possible in the near future they may acquire sufficient acreage of land to grow an appreciable amount of their own cane and then the very idea of affording substantial relief to the agriculturist by ensuring that so far as possible the home market

shall be reserved for him will be frustrated. The agriculturist have not received so far a fair and equitable share of the benefit given by the protective tariff. The Tariff Board should this time see that the interest of the agriculturist is sufficiently protected and they are given a fair and equitable price for their cane so that in due course they may be in a position to grow canes on modern method and ultimately when the protection is withdrawn be able to meet the demands of the sugar factories at a price which may enable the mills to compete with sugar industry of other countries. Cultivators should be encouraged to do cane cultivation on modern lines and concentration of cane cultivation in the hands of the mill should be prevented.

22. (b) Zoning system is not favourably looked upon by the cultivators of cane. As they apprehend this will entirely place them at the mercy of mill owners. Zoning scheme should only be introduced if the mills are prepared to enter into contract with the growers on reasonable terms. At present the agreement are mostly one sided and disadvantages to the grower. The grower should be entitled to damages if the contracted amount of cane is not taken within the specified period. There should also be no interest charged on their advance. The form of contract should be prepared by the Tariff Board who will look to the interest of both sides. When zoning scheme is introduced fixation of minimum price, irrespective of the price of sugar in the market is essentially necessary to encourage the cultivators to take up the cultivation on improved methods. Certainty of a fixed minimum price will encourage growers to take to cane cultivation on modern lines and continue the same. There will be then no apprehension as some mill owners entertain, of the discontinuance of cane cultivation even if the price of the other staple crop is improved.

Intensive cultivation should be encouraged rather than extensive cultivation and every cultivator who wished to grow cane should be given a chance and the mill authorities will have no right to pick and choose between their cultivators. The area necessary to be developed should be distributed evenly according to the means of each cultivator.

26. At least 80 per cent. of canes are carried by carts. The weight carried depends on the quality of the bullocks and the cart and the condition of the road. From 15 to 30 Mds. are carried on the bullock carts. The rubber-tyred carts will undoubtedly be a great improvement but it will be beyond the means of average cultivators. The rubber-tyred carts are no good without proper communication.

27. The cart roads, nowhere in the Province where sugar mills exist are in a good condition. Feeder roads are in a terrible condition.

29. The average cost of transport of cane by cart is three pies per mile per maund. Some cane growers have their own carts but mostly they have to hire them.

30. Wherever tolls are levied carters have to pay them and that is an extra burden on the growers. These tolls are mostly levied on bridges or other ferries over rivers. The carters have also to pay municipal tax if their cart frequently uses municipal roads. This does not include the Salami the carter have to pay to District Board Peons.

48. The basis for fixing the minimum price is defective. A minimum price is a price less than that which must not be paid in any case irrespective of the market price of the sugar. In the case of sugarcane this minimum could only be at least the cost of its cultivation and some margin of profit which may fluctuate on a rising scale, so that the cultivators may be encouraged to take to cane cultivation and they may not be in a hurry to clear of their fields as soon as possible. The cost of cultivation cannot fluctuate from day to day. It is a fairly fixed thing and can vary only after long periods when fairly extensive changes have taken place in the condition and other factors which effect cultivation. But the Governments of the United Provinces and Bihar formulated a formula by

which the price of sugar per maund into percentage recovery of cane divided by 200 gave the price of sugarcane per maund.

The scale of the minimum price which the two Provincial Governments drew up for their respective areas according to this formula did not provide for a minimum price in the sense that less than that would never be paid to the cultivators—this minimum being the average actual cost of cultivation *plus* transit charges with some margin of profit. The result has been that from 5 annas a maund which itself was not a remunerative price—the price of cane has come down to ten pice (As. 2-6) per maund. A sliding scale of prices in which there is no minimum fixed in the sense described above is indirect help to those who find it to their interest to cut rates. If the price for cane goes down and down due to fall in price of sugar because of unhealthy competition to such an extent that it becomes unremunerative to the cultivators, they will decidedly discontinue cane cultivation. When the factories themselves deliberately choose to create abnormal condition, it is unfair that the poor cultivators should be made to suffer for no fault of their own. The minimum price should at least be cost of cultivation, cartage, and some margin of profit without any reference to the market price of the sugar. It will be for the mill-owners to adjust their prices and come to some agreement among themselves. There should be a difference in the minimum price paid for canes at mill gates and at out-stations. The price at mill gates should certainly be more than at out-stations.

(15) *Letter, dated the 22nd August, 1937, from the Chotanagpur Traders' Association, Jamshedpur.*

I am directed by the Committee of this association to submit, for the consideration of the Board, the following memorandum on the Tariff Board Enquiry on Sugar Protection:—

In the opinion of the Committee, the present heavy taxes on sugar, Protective and Excise are very seriously affecting the interests of the people. The high protective duty has inflated the price of sugar to an unusual degree and has given rise to great sufferings for the general consumers of this poor country, and positive harm for various industries, such as sweetmeats, lozenges, fondants, syrup, etc., in which sugar is used as raw material. These industries are now labouring and decaying under the serious handicap of an artificial high price of sugar. A great impetus can be given to these subsidiary industries by removing the duties imposed on sugar.

The experience of the last five years of protection clearly shows that the opportunity given by this long period of protection, to the sugar manufacturers, has not been properly utilised by them. They are to-day almost as inefficient in production as they were at the beginning of this period. It is therefore hardly fair that both the common people and the various subsidiaries should be so heavily taxed to offer excessive protection to a few sugar manufacturers who, if they had adopted modern scientific methods of production and industrial policies in their factories and had utilised all their by-products by manufacturing rectified and commercial spirits, rums and wines, and paper pulps, etc., they would not have required any protection at all, and would not have become a source of menace to the interests of the poor consumers and other productive groups of this country.

Sugar is, moreover, one of the commonest necessities of life and an article of every day use. The food value of sugar is also very great and it is certainly deplorable that a large section of people should be deprived of consuming it, only because the manufacturers here are not efficient enough. The injustice of it all is brought home to us when we come to remember that sugar is made to bear a duty which is nearly 3 times

its cost of production. The cost quotation of superior Java white sugar was Rs. 2-7-8 per maund on 16th August, 1935, and it never went beyond Rs. 2-15-5 in the year 1935-36. The imposition of a duty of Rs. 9-4 per cwt. on an article which costs only about Rs. 2-8 to Rs. 3 per maund is quite improper and unjustifiable.

The Committee suggests that both the Custom duty and the Excise duty on sugar be immediately reduced, and that the Tariff Board should deal with the capitalists engaged in the sugar industry in such a way as to enforce them to adopt up-to-date productive methods and industrial policies in order to utilise all their by-products. At present, these factories should be allowed protection on a reduced scale and only for a fixed short period, during which time they shall have to make themselves well equipped and self-supporting.

The Committee also suggest that the Government should set up a Board or a similar body for the proper control of distribution of sugar throughout the country. The appalling difference between the cost of production and the selling price of sugar is not the result of high protective duty alone, but also of the undue profits made by various middlemen engaged in this trade. In August, 1936, Java sugar was sold at Calcutta at Rs. 9-7 per maund and at Bombay Rs. 9-15 per maund whereas the cost quotation, as given above was only Rs. 2-7-8 per maund. It is desirable that the price of sugar should not be left in the hands of profiteering middlemen to be determined or made to fluctuate to their own convenience, but that it should be standardised and kept at one level throughout the whole of the country.

In view of the fact, that by a judicious control of distribution the Burma Oil Company can profitably sell their petrol at the same price per gallon in all parts of India, it is certainly not impracticable to control the distribution of sugar in such a way that it can have but one price in all latitudes within the country. Such an arrangement may reduce the price of sugar by cutting down the profits of unscrupulous middlemen.

The Committee is prepared to offer their humble services to the Board should the latter, in the process of their enquiry invite their opinion on any aspect of the question.

(16) *Memorandum submitted by the Committee of the Indian Sugar Producers Association to the Tariff Board in connection with the general questionnaire on sugar.*

In submitting their views the Committee of the Association have dealt only with questions of a general nature, for it is felt that individual factories are better able to answer those which pertain to their own particular locality.

7. (a) Intensity of cane cultivation in the vicinity of the factory combined with facility of transport.

(b) 20,000 maunds per day or 2,500,000 maunds per season.

21. One, and possibly the greatest, objection which the ryot has to the cultivation of cane is the duration of time which it takes between the date when he has to reserve land for the crop till he receives money for its proceeds. This is not less than eighteen months unless he has cultivated an early ripening variety of cane. To partly overcome this difficulty, certain factories make a practice of advancing money to the ryot.

Then, there are the difficulties of harvesting the crop, the diversion of labour from other agricultural pursuits and the loss of bullocks' time from farm work involved in the transport of cane. It is these difficulties which have so encouraged the practice of ratooning cane which even from the point of view of perpetuating disease should be discouraged, if not prohibited by law.

With a view to popularising the cultivation of cane, the Committee have the following suggestions to make:—

- (1) The supply of sound seed cane of approved varieties. It is notorious that if left to his own devices the ryot will plant from the worst portion of his crop. This is where the Agricultural Department can do most valuable work. It is also suggested that particular attention should be paid to the question of damage by whiteant after planting, and top-borer attacking cane in September.
- (2) The encouragement to factories to acquire land for the establishment of seed farms, from which good seed cane could be distributed. Government could assist in the acquisition of land for this purpose by suitable legislation.
- (3) Intensive education of the ryot in the best agricultural practice for the cultivation of cane, including the intelligent use of suitable fertilisers. The system of education to be that best suited to local conditions.
- (4) An examination of the prospects from irrigation by tube wells and canals might be valuable.
- (5) Every possible encouragement to be given to factories to lay down local tramways for the carriage of cane, so reducing the strain on the ryots' resources in providing bullock transport.
- (6) Such terminal organisation at factories which will reduce as much as possible the time lost in keeping carts waiting to unload. The Committee favour a system which ensures a cart being able to transfer its load as soon as possible after its arrival at the factory or other delivery station.
- (7) The provision of good road communications, particularly stressing the maintenance of good bullock cart tracts.
- (8) The Committee would advocate that Government should prohibit the weighment of cane during the hours of darkness except at factory or tramway depots. It is their belief that when lighting facilities are very inadequate, as they generally are, the weighment of cane at railway stations tends to lead to abuses, however zealous the inspecting staff may be. If there were proper organisation there should be no hardship in restricting weighments to daylight hours.
- (9) To ensure better control of cane deliveries at railway stations and factories the system of issuing passes for carts, which is employed by certain factories, should be made compulsory. This, by reducing the time carts are kept waiting, would reduce transport charges where ryots employ professional carters for the carriage of their cane and save sugar losses due to stale cane.

The Committee also suggest that carts should be licensed.

22. (a) The Committee agree with the conclusions arrived at by the Tariff Board when they examined these problems. It would, however, prove of great benefit if facilities were given to every factory to acquire a certain area in the vicinity of the factory for the establishment and maintenance of a seed farm, to be used for providing a supply of good quality cane seed and for the rapid multiplication of new varieties.

(b) The introduction of a system of zones for sugar factories has been insistently advocated. If this has formed a part of the legislation which was introduced at the time Government decided to grant protection to the sugar industry many of the difficulties with which the manufacturing side of the industry is now confronted would never have arisen. It is feared that in some areas it is now too late for any effective legislative action to be taken, but there do exist areas where conditions make it possible for groups of factories to come to a mutual agreement for the

equitable distribution of local supplies of cane, and in this Government might be of assistance in an advisory capacity.

24. (a), (b) (1) and (2) The Committee are in favour of the regulation of sugar production by means of quotas, and also the licensing of new factories, including extensions to those at present in existence.

Until there is a definite and material increase in domestic consumption, India's production of sugar may now be accepted as having reached saturation point, and to avoid the evils of overproduction we consider that Government should at once take powers to limit the quantity of sugar which may be manufactured under a system of quotas. This remedy will not, however, be of any avail unless, linked thereto, the establishment of additional factories is prohibited and any extensions to the plant of existing factories, except for the purpose of increasing efficiency or improving the quality of the product.

This question becomes highly complicated by the position of Indian States towards the erection of their own factories and the export of sugar thus made into British India with possible non-reciprocity, but even if a satisfactory solution to this difficulty cannot in all cases be found, our opinion remains unaltered, that the regulation of sugar production in British India in the manner suggested is essential to the well-being of the industry and to the many interests dependent upon it.

In this connection, we would emphasise the necessity of a decision being reached, if possible, before the end of the current year so that the cane planting programme during the ensuing winter can be worked out in relation to the sugar requirements of the country for the crushing season of 1938-39.

26. The Committee would strongly favour the more general use of the rubber-tyred bullock cart.

33. The Committee is of opinion that a flat rate is to be preferred to a maundage rate.

34. The Committee consider that the existing freight rates on limestone, coal and other general stores are capable of reduction.

36. A tramway system is of undoubted advantage to a factory.

48. Under present conditions, the basis is not satisfactory and calculations should be based more on the rates obtained for sugar by average factories than on the special rates obtained by a few factories employing more expensive processes. It is felt that the rates are based on a small proportion of special sugars which are being produced by certain factories.

The Committee would also suggest that the 8-anna margin which is at present used in arriving at a scale be reduced to enable the cane rate to be adjusted more frequently and equitably.

The Committee may have further suggestions to put forward at an early date.

49. Except for the illiteracy of the suppliers such a system would be feasible. Especially so when combined with zoning and with the suppliers looking to the mill for an equitable price fixation. A zoning system would be necessary as the mill would have to be in close touch with the growers and be able to fairly allocate the quantities of early, medium and late varieties.

Without control, the danger of planting an excessive quantity of a heavy yielding late variety, with difficulty distinguishable from an early variety, would operate against any scheme of this nature.

52. The Imperial Council of Agricultural Research is concerned with research problems and the effect of its operations must be patiently awaited. The Committee emphasise the necessity for immediate action on an investigation into the question of the prospects of the application of the natural method of control of the borer pest.

As regards the Agricultural Departments of the United Provinces and Bihar, the work they are doing is on the right lines but could be made more valuable if increased funds were placed at their disposal.

79. Considering the hazardous nature of the enterprise, the risks of drought, floods, pests, the machinations of buyers, the Excise Duty, the costs of maintenance, the demands of taxation, a balance of 10 per cent. at credit of revenue, after allocations to depreciation and reserve accounts, is not excessive.

93. The Committee consider that this is essential.

94. The Committee favour a Central All-India Sugar Selling Organisation, but only provided—

- (a) that it is preceded by licensed control of production, and
- (b) that it is otherwise independent of Government control.

In the view of the Committee, any attempt at organised selling which is not supported by control of production, must either break down or be too elastic to be of value.

95. The Committee are of opinion that the present system of standardisation is open to grave question. The value of a sugar does not depend on the size of the crystal or on its appearance in bulk in a glass container. Further, it is impossible to get two observers to agree as to the standard on such a crude system.

The Committee would favour standardisation on rational lines which would include:—

- (1) The polarisation or sugar content.
- (2) The colour determined in some formal way in an apparatus such as the Lovibond Tintometer and expressed in definite colour units.
- (3) The quantity of suspended matter.
- (4) Possibly, but not necessarily, the quantity of ash might also be included. Ash is of importance to the sweetmeat maker but he is not yet educated enough to appreciate its influence.
- (5) Uniformity of grain and absence of dust may also be included.

98. The Committee favour an organisation on the lines of the Cement Marketing Board being set up, provided its control is vested in an independent body and it embraces all producers, with Government prohibition of new factories and extensions for purposes other than improvement of quality and efficiency.

The establishment of a "futures" market by dealers Associations, on the lines of the East India Cotton Association should make for stability in prices by providing security for dealers operations, and thereby improving the general trade in sugar.

103. It may be accepted that Java, the chief importing country, has not realised remunerative prices for her sugars in any year between 1930 and 1936. In support of this view there is the knowledge that Java's production has fallen from 3,250,000 tons in 1930 to 500,000 tons in 1936.

104. Although the Committee do not believe in export as providing an ultimate solution of the problem of overproduction, they think it might serve one useful function, and that is an overflow within strictly defined limits. If production aimed only at meeting internal demand, but if inadvertently a surplus resulted, it would then be of definite value to export the surplus.

The Tariff Board, in their report on cement in 1925, stated that "ordinarily when an industry is unable to dispose of its whole output in the markets within easy reach, it is forced to sell part of it in a distant market, whether domestic or foreign, at a lower price". On this argument they based their recommendation for a bounty on cement to be exported to Burma. While the President was unable to concur "because it involves

a departure from the principle that the amount of protection should not exceed what is required to enable the industry to capture the market which it can ultimately hold without assistance", we do not think that the same objection could be held to apply in the case of an occasional overflow as distinct from a scheme of regular export.

105. (1) By waiting until 1934 before imposing an excise duty, instead of introducing it at the same time as the 25 per cent. surcharge on import duties, Government was directly responsible for the unduly rapid development of the industry and for the present state of existing or threatened overproduction. If introduced at the proper time it might have been justly claimed to be an equitable revenue tax, so far as any tax on foodstuff is concerned, but in fact it has been to all intents and purposes a direct tax on an individual industry, on the sole justification that it is making, or should be in a position to make, excessive profits. Up to the end of the 1935-36 season, the industry was able to pay this tax because it obtained, more or less, the intended measure of protection. Since however production has approached and threatened to exceed consumption, the tax has become an intolerable burden on the shareholders of sugar companies, as a result of which, they are obtaining no return on their capital.

As opposed to this direct levy on production, the industry could have accepted with comparative equanimity a levy on profits on a reasonable scale.

(2) The position described above has been intensified by the recent increase in the excise duty, and the shareholders are now paying a further 135 lakhs annually as direct taxation on supposed profits which are in fact non-existent.

108. What is meant by "effective"? If the development of an industry by an increase in production of 1,000,000 tons is effective, the answer is "yes". If "effective" means the establishment of an ordered industry with security of capital combined with sound finance, the answer is "no".

The effect of the import tariff, created in 1932 has been to create a barrier against imports from abroad behind which the industry has developed at an extraordinary rate of progress—a very unhealthy rate as events have turned out. This expansion has taken place without any control either by Government or the industry itself. What appeared to be an attractive outlet for capital seeking employment has resulted in the launching of numerous undertakings without any proper consideration being given to local conditions. Supplies of suitable raw material—financial requirements and in many instances without adequate, or even any, expert knowledge. The result has been that although India has been rendered self-supporting as regards her sugar requirements, her revenues have suffered severely from an almost complete stoppage of imports, while the domestic industry due to the reckless establishment of factories—many of which are unsuitably situated, the need of replacing revenue hitherto realised from the import tariff by the imposition of an excise duty—an utter absence of any organisation for the marketing of its sugar finds itself to-day confronted with a situation which, to say the least of it, can only be described as extremely critical even in the case of the most efficient units of the industry.

109. The original object of protection aimed at the country producing its total sugar requirements, and this object has already been attained. The Committee therefore consider that the extent of protection should be kept at such a level as to limit imports of foreign sugar.

The Committee are of opinion that the existing level of protective duty is such that the ryot obtains an equitable return for his enterprise, and that this will only continue provided the position is not aggravated by imports of sugar from abroad.

It does not follow that world conditions will remain unaltered between now and 1946, and it is therefore recommended that the present level of

protection be maintained, and further, that the Government should take powers to regulate it as and when necessary, to limit the entry of foreign sugar into the country.

110. The Committee have the following suggestions to offer:—

- (1) Improvement in agriculture and the application of research so as to reduce the cost of cane and improve its sugar content.
- (2) Means to control borer infestation and simultaneously increase the sugar content of the cane.
- (3) The adoption of the zoning system which will allow factories to help the small grower to make use of the results of research.
- (4) Means to ensure the manufacturer obtaining a fair share of the protection by correlation between the cost of cane and effective selling price of sugar (after deduction of excise) which will demand a centralised marketing organisation with power to regulate sugar prices.

(17) *Letter, dated the 18th June, 1937, from the All-India Sugar Merchants' Conference, Cawnpore.*

I beg to send herewith six copies of the representation of the All-India Sugar Merchants' Conference for consideration of the Tariff Board. This representation is in two parts, one part General Representation and the other part Replies to the General Questionnaire of the Tariff Board.

2. I would invite the attention of the Tariff Board to the attitude that has been maintained towards the Sugar Traders during the last seven years. For a long time, particularly while the boom in the Industry lasted, there was a tendency to consider Sugar Merchants as something foreign to the Industry. In this connection, I would quote the following extract from the speech of the Honourable Sir J. P. Srivastava, at the opening of the First All-India Sugar Merchants' Conference at Cawnpore on the 30th November, 1936:—

“As organised at present no large industry can hope to carry on successfully without the assistance of merchants able and willing to finance the distribution of the articles manufactured, bear the risks attendant on an ever-changing interplay of demand and supply, help the manufacturers to chalk out their programme of production according to a pre-arranged plan of off-takes, and bring them into close contact with the needs and possibilities of the various markets. These are among the functions which you who represent sugar merchants all over the country have to perform in relation to the sugar industry, and it is doubtful if at present they can be performed as efficiently and economically by any other agency. I realise that but for your co-operation the financially weaker section of the industry is likely to find it very difficult to carry on.”

3. On occasions, there has been a tendency to consider Sugar Merchants as undesirable interlopers and middlemen and attempts, however, unsuccessful, have sometime been made to cut out the Sugar Trader and to establish a direct contact between the manufacturer and the consumer. The above extract from the speech of the Honourable Sir J. P. Srivastava affords a complete reply to this unbusiness-like attitude which is based on a lack of knowledge of the functions and services that the trader renders in this country. He acts as a salesman for the manufacturer on the one hand and as a buying agent for the consumer on the other hand. He takes the risks involved in the marketing of the manufactured articles, and assists the buyer by making available to him within his easy reach the exact kind of goods required by him. In the absence of the merchant, all these functions will have to be performed by the producer himself, and to the important task of production will be added those of distribution and of marketing. Experience of the past few years has shown that the Sugar

Manufacturers in India cannot discharge them efficiently to their own immediate and larger interests.

4. The burden of marketing the entire Sugar produced in India is therefore borne by Sugar Merchants, and will continue to fall on them for long. As the Tariff Board will find in the course of the representation, the sugar produced by Mills in India is sold ready or forward to Sugar Merchants and these have to distribute it and to sell it for consumption. The real competition of foreign sugar and all other factors which affect sales and marketing are faced by them. They have also to undertake the risks involved in buying and stocking large quantities, in the selection of qualities suited to meet the requirements of consumers.

5. The Tariff Board will appreciate that Sugar Merchants are an integral part of the economic polity of sugar in India, and that their interests are entitled to as much consideration as those of cane-growers and of sugar manufacturers. They represent a part of the general trading community in the country and if conditions prevailed which do not make it profitable to trade in Indian Sugar, the interests of the Sugar Industry in India and the public and the Government are bound to suffer.

6. The Central Committee of the All-India Sugar Merchants' Conference ventures to hope that the Tariff Board will be pleased to give due weight and consideration to this representation and will make such recommendations as would be conducive to the interests of the Sugar Trade and also of Industry in India.

Enclosure.

GENERAL REPRESENTATION BY THE ALL-INDIA SUGAR MERCHANTS' CONFERENCE, TO THE TARIFF BOARD.

The All-India Sugar Merchants' Conference held at Cawnpore on 30th November, 1936, decided by a resolution that a representation to the Tariff Board be prepared and forwarded to the Tariff Board on behalf of the All-India sugar merchants. In pursuance of that resolution the Central Committee now beg to place our views before the Tariff Board.

2. At the outset we desire to express our strong views that protection for the Sugar Industry for a further period of eight years is necessary. In pressing this for the consideration of the Board it is necessary to relate historically, though as briefly as possible the experiences gained during the operation of the first protection period.

3. By the protection Act passed in 1932, the Import Duty on Sugar was fixed at Rs. 7-4 per cwt. for the first 7 years. In addition to and over and above the recommendation of the Tariff Board the manufacturers had a windfall in the shape of 25 (twenty-five) per cent. surcharge which worked out at Re. 1-13 additional duty making a total import duty of Rs. 9-1 per cwt.

4. This extraordinary high tariff wall encouraged capitalists to start new Mills immediately, a further incentive being that at that time there were no cane rules and the manufacturers were able to buy cane at very cheap rates, say from 3 to 4 annas a maund from the cane-growers. In the initial stages there was also no Government supervision as regards weighing of canes and fixing of minimum prices, etc., with the result that every manufacturer took the fullest advantage of the situation to exploit the illiterate agriculturists. All these factors helped the manufacturers to make large profits even in the beginning and it would not be an exaggeration to say that some of them made more than 50 per cent. profits in the very first year of the working of their Mills giving them scope for extending the capacity of their factories and in some cases even for building new factories. The protection granted was so high and the profits gained by the manufacturers so huge that persons of other trades, landlords, money-lenders, building contractors, etc., in fact any one with capital awaiting use built factories, the number of which exceeded the highest expectation. A heavy tariff,

cheap cane, a market at the door and higher remunerative prices of sugar, all these beneficent factors naturally continued to assist the rapid and stupendous growth of the Industry. This phenomenal development was not the result of any intelligent enterprise in the sugar industry. It was due almost entirely to the high tariff, which gave a blank cheque to the industry in India and facilitated a sudden expansion of the industry unparalleled, the Committee think, in any trade or industry in the country.

5. Unfortunately the Industry is located to the extent of 58 per cent. in the United Provinces, 28 per cent. in Bihar. Both of these are at great distance from many of the chief consuming centres in this vast country. The Government imposed no restrictions such as zoning, and the manufacturers being anxious only to build factories at place where cheap and sufficient cane is available, the Industry has been concentrated in only two provinces in spite of the existence of better conditions in many other parts of our country. The natural and safer centres for the Sugar Industry, namely, the Deccan and Southern India are behind the provinces of United Provinces and Bihar.

6. Up to the middle of the year 1935, there was no question of overproduction and the factories realised very high rates for sugar and therefore nobody troubled about the question of the most suitable places for the industry. It was a hectic growth. In the second half of 1936, when the manufacturers realised that there was overproduction and the prices tumbled down by 30 per cent., the matter presented an insoluble problem to the manufacturers, with such factors as inter-Mill competition and the higher cost of production than in foreign countries like Java. Our own country has now become self-sufficient. The sacrifices imposed on the consuming masses by tariff have been repaid in the cheapening and self-sufficiency of sugar. The enormous profits of the manufacturers having attracted the attention of the Government and as a result of budget necessities and Excise Duty of Re. 1-5 per cwt. having been imposed, it took away a small slice of profits but still the profits were enormous. The profits have been only reduced during this year as a result of the rate of sugar having declined sharply (1937). In spite of this, even at this price more than 50 per cent. Mills must be making normal profits and 30 per cent. less profits. Only a few Mills have been hard hit.

7. The Excise Duty has been raised by 11 annas per cwt. during this year which has no doubt come up as a blow to the industry and to the agriculturists and the consumers. Before the Excise Duty, the cane rates in United Provinces and Bihar were 4 as. 9 ps. Later in March they went down to 4 as. which are to-day 3 as. This clearly shows that the greatest losers are the agriculturists. By lowering the cane rates the Mills at present adjusted their cost against increase in Excise. Thus on the whole the position of the Industry is as sound as before, almost the same.

8. During the past protection period the enormous profits earned have enabled most of the mills to extend their capacity and improve their efficiency and the cost of the manufacture has been reduced during the past period on account of such extensions and efficiency. Even to-day under the present tariff and recent Excise, the Mills could make higher profits but inter-jealousy and inter-mill competition and most unbusiness-like and selfish methods have caused profits to be reduced.

9. The fall in the sugar market began in the second half of 1936. It was mostly due to the manufacturers' inter-competition and owing to expected overproduction, a race to sell quickly. In the rainy season too more than 30 per cent. sugar was deteriorated in the mills' godowns and such sugar was delivered to the merchants under contract terms which operated very gravely against the merchants. This ruined the trade completely and co-operation was ended. The manufacturers intoxicated by the high profits were blind to the wider interests of the trade at a time of crisis and instead of co-operating and helping the merchants they forced the unjust contract terms on them and brought ruin on the trade. Had there been any co-operation between manufacturers and traders sugar prices

even to-day would have remained substantially higher and the manufacturer and the agriculturist and all interested in the industry would have benefited. But as we have mentioned at the outset the majority of those who entered the Sugar Industry on the crest of the tide were not industrialists. They apparently came into the Industry to exploit the masses and had started in the name of the Industry and even to-day most of the manufacturers are neglecting the true interests of the trade and masses and pursuing a policy which must ultimately ruin the Industry, if it is not checked. The Government in granting protection unfortunately failed to insert any conditions in the Act but only raised the tariff, thus giving a blank cheque to the capitalists to exploit the consumers.

10. The time has now come when the Government should take steps to ensure that all the interest in the Industry are protected. The skilled and unskilled labourers are paid very low wages specially in the United Provinces and Bihar. The workers have to labour on very low wages in the severe Northern India climate without adequate dwelling houses near the Mills. And when profits are reduced the manufacturers will again think of lowering the wages. Therefore in order to stabilise the cost and in order that labour may get every benefit from the protection minimum wages for skilled and unskilled should be fixed.

11. The main idea of Government in giving protection to the sugar industry was to help the agriculturists but the results have been otherwise. In India normally 25 per cent. consumption is of refined sugar and 75 per cent. is of "gur", i.e., raw sugar. Therefore if Government has serious desire to protect the agriculturists, they should have thought of protecting the "gur" Industry also. Practically speaking during the past protection period, the Refined Sugar Industry has progressed while the "gur" Industry has been well-nigh ruined. The price of "gur" is to-day less than what it was at the time of granting protection. This means that the illiterate and poor agriculturists of the United Provinces and Bihar were made to rely upon the protection in the Industry by the propaganda of the manufacturers. They grew more and more cane after sugarcane price rules, etc., came into existence and owing to higher rates of cane these poor people planted more and more cane and out of proportion to the requirements of the Sugar Mills.

12. The production of "gur" in 1931 was nearly 2½ million tons and this year it is 4 million tons. Unfortunately nobody has raised a voice regarding the serious plight of the "gur" industry up to now, although there is more urgency for protecting this industry to-day than the Sugar Industry. Something should be done to protect the poor agriculturists and the urgent necessity now is to inquire as to how to save the "gur" industry and the cane-growers. The idea that the lower "gur" prices have no connection with the rate of sugar is wrong. For 12 months past we have found that sugar prices are also lower and the consumption by urban people is not increasing fast owing to the lower prices and the competition of "gur". No doubt sugar is consumed more by urban people and the "gur" by rural people but if "gur" had not become so cheap the consumption of sugar would have much improved by its extension to rural areas. Thus in determining the prices of sugar the prices of "gur" now should always be taken into consideration and it is an urgent necessity that steps should be taken to improve and stabilise the "gur" industry. Also Khandsari Sugar Industry be encouraged which will ultimately be helpful to small cane-growers who are at a greater distance than factories.

13. Unfortunately no real progress in the Sugar Industry has been made in Southern India and Deccan, the tropical parts of the country. In Deccan the cane-growers have been ruined on account of the lower prices of "gur" and leased lands have gone into the hands of the factory owners on a rental of Rs. 10 an acre per year, while the rental was Rs. 50 to Rs. 70 before protection period.

14. If progress has been made anywhere in Southern India, it is in Mysore and the example of Mysore is now before the eyes of Hyderabad,

Cochin, Travancore and other Indian States. We shall not be surprised if in future these grow more canes and produce large quantities of white sugar. The Excise Duty is an open temptation to the States and the natural climatic conditions will help them. Also they can earn from distilling molasses.

15. This will mean slow and gradual ruination of the United Provinces and Bihar Industry or its being shifted from Northern India to Southern India and Indian States, similarly, to the Cotton Industry of Bombay. The examples of Bikaner and Bhopal States starting Sugar factories should be quite enough for the Enquiry Committee because neither of these States are fit for growing good and cheap cane. In spite of these most important adverse factors the States are putting up sugar factories because of the benefits of the Excise Duty. To-day we are largest growers of cane in the world and on account of the natural climatic conditions of Southern India and the benefits to the States even more cane will be grown and on account of Provincial Autonomy the presidencies like Madras and Bombay may try to foster the Sugar Industry. Considering all these circumstances, unless the "gur" Industry in United Provinces and Bihar is protected, the agriculturists of these two provinces will be ruined. Higher prices of cane in United Provinces and Bihar will be direct encouragement to start factories in other parts of this vast country.

16. There being no conditions being imposed for the training of Indian chemists and Engineers and other educated Indians during a specific period in the first period of protection, the Indian educated classes have not fully benefited by the expansion of the industry. Dutch, English, German and other foreign chemists and Engineers get fat salaries in the Industry, while most of the Indian employees are paid on a very low scale. The Government and the manufacturers have under-valued Indians and the latter have never risen to the sense of patriotism and induce them to train and employ men of their own country. Even now there are Chinese Panmen of Java in Indian Sugar Mills. The inferior class of foreign chemists are getting better pay than some of those best Indian chemists. The idea that the manufacturers are trying to help Indian graduates is a myth. Unfortunately the Act has not prohibited such employment of foreigners after certain period as is done in England and other countries.

17. From the beginning of the extension of Sugar Industry, the merchants whole-heartedly co-operated with the manufacturers in distributing Indian sugar. At a time when quality was bad and irregular, the enterprise of the merchants and the risk they took helped the manufacturers to dispose of their sugar as fast as it came out of the factories. This indirectly helped in conserving their working capital. The risk of fluctuating market was borne by merchants and the manufacturers had a clear way of profits. The merchants hoped that as time passed, quality would be improved and their co-operation with the manufacturers should result in profits to both. The enterprise of the merchants created the Cawnpore Market for Indian sugar. Many manufacturers instead of employing experienced sugar merchants as their selling agents, appointed their own relations and friends. By creating such middlemen and the inexperience and indifference of manufacturers themselves, the improvement of quality was delayed. In the beginning when the quality was irregular the manufacturers in order to protect them made the terms of the contract one sided in their own interests. The merchants felt that these terms were unjust and unfair but they hoped that when time passed and more experience was gained the contract will also be improved. They always believed that whatever terms were printed, in actual working, fairness would be observed by the manufacturers.

18. Some of the manufacturers with no previous experience either of sugar manufacture or trade at all, began to treat the merchants most unfairly. In 1936, the merchants entered into large forward contracts of whole production of the factories in good faith and on account of very large manufacturing bargain, the manufacturers overcrushed cane, produced larger quantities but in quality very inferior and delivered the same to the

merchants under the protection of vague terms in the contracts. This resulted in a complete ruin of sugar trade. The merchants approached the Indian Sugar Mills Association to improve the matter but the Association remained adamant and indifferent. The copies of the correspondence which passed through between the Merchants Association and the Mills Association is annexed herewith.

19. The All-India Sugar Merchants' Conference was held in Cawnpore at the end of last year. The report of the Conference which is attached will give some idea of the difficulties of the trade. After this joint Committee of the members of the manufacturers and the Merchants Associations representatives was held in Calcutta but after an agreement was reached between the parties, the manufacturers again changed their mind with the result that the trade is still suffering from the inequitable terms of the contract.

20. Almost all of the manufacturers are still selling on that old contract form, some on new contracts while one prominent firm among the manufacturers whose production is about one-tenth of the whole, having appointed European selling agents are selling on a quite new contract which is worse than all previous ones. The whole contract is based upon the prejudice against Indian merchants. These Agents had no previous experience of selling Indian sugar. A specimen of contract forms is annexed herewith for information, and the Board will find that the form contains octopus terms.

21. If Indian Sugar Mill-owners, before granting selling agencies to European firms, had cared to remember that these very people at the Annual Meeting of their Chambers of Commerce were protesting against granting protection to Indian industries, they would have not benefited such firms from getting the benefits of protection by giving them selling agencies.

22. As a consequence of all these factors, the merchants are buying only from hand-to-mouth with the result that the manufacturers have to carry the stock and being inexperienced in the world sugar trade have become nervous. There are petty jealousies among themselves also. To-day they know how to sell cheaper than their brother manufacturer and until there are profits the manufacturers are in a race to clear their stock at the first available opportunity with the result that the prices have gone down much lower.

23. During the past 12 months Java and all other foreign sugars have improved by about 40 per cent. Java which had gone to Rs. 3-4 per cwt. c.i.f. Indian ports in 1935 is to-day standing at Rs. 6 per cwt. and as a result of the London Sugar Conference, now there is no reason for Java or any other foreign sugar to go down. At to-day's price, the parity at the Indian Ports is about Rs. 11-2 per maund, while similar quality of Indian sugar is sold in Calcutta at Rs. 6-12 and in Bombay at Rs. 7 per maund.

24. During the last season India had overproduced and it will do the same this season also though a small carryover of about 75,000 tons distributed among 150 Mills should not bring such a heavy fall into the market. If the contract terms were fair and just and the qualities were delivered to the merchants according to the samples, and the Mills have a distributed selling policy extending over for 12 months, the merchants would have carried over such a small stock or would have distributed it among 700,000 villages of such a vast country. Thus the visible stock would have been invisible. But the pride and prejudice of the manufacturers caused the withdrawal of the co-operation of the trade and this is the chief reason of such a heavy fall in prices.

25. For three years various attempts were made by the manufacturers to form a Marketing Board but they have not succeeded and from their present mentality it seems doubtful whether they will succeed. Before determining the future rate of protection, the Government should keep in mind the present price of Java sugar or any other foreign sugar and the

world tendency and other factors, but not the present price of Indian sugar. The present low price is temporary until there is organised attempt of the manufacturers and the confidence is restored. Before granting further tariff (as the duty is borne by the consuming masses) a condition is absolutely necessary that selling or distributing agencies of the sugar working as the link between factory and trade should be entirely in the hands of Indians. It is primary object of protection of employment of Indians should be created and the nationals of the country prosper but by granting such selling agencies to European firms, Indian merchants are deprived of their legitimate right of trade and are forced to trade with such firms although unwilling to do so. None of these foreign firms took risk and trade in Indian sugar but they are out only for cream in shape of commission.

26. In our Cawnpore Sugar Conference, one merchant brought a resolution protesting against granting selling agency to European firms but as merchants thought at that time this might resolve intra-race or colour question and we deemed it advisable to wait until the enquiry of Tariff Board. But it is necessary to emphasise in every country, even in England there are specified conditions, that all the benefit of the protection should go to the nationals of the country and none to any body else. If the Government do not stop it now by legislature the evil example of such sugar selling agency, may spread further and extend unemployment in the sugar trade.

27. We merchants are firmly convinced that the present low price is the result of the manufacturers' own creation and that as soon as they improve or unite, the prices will be determined by the prices of foreign sugar at the ports.

28. The system of selling sugar on samples has proved most harmful to the trade and the industry, as sealed samples are not provided by them at the time of making contracts. In every other country, the qualities are standardised and generally the manufacturers deliver qualities better than the contract standards. During the present season, the qualities of Indian sugar have improved to some extent and the Indian sugar standards prepared by the Committee consisting of the Government Sugar Technologist and representatives of the sugar manufacturers and trade have prepared Indian sugar standards since 2 years and it will be necessary to trade on these Indian Standards. This is more in the interest of the manufacturers than the trade because sugar sold on Standards will eliminate inter-price-cutting competition, will reduce the quality disputes and will also be helpful in creating Sugar Terminal Markets in the trading centres of the country.

29. We are surprised that the Government of India agreed at the World Sugar Conference recently held in London that India should prohibit the export of sugar to overseas for 5 years. Looking to our acreage and continuous improvement in cane cultivation, the time may come when we may be able to export our sugar to overseas. By intense cultivation and improved methods Southern India can produce sugar at a cost near to Java, which can be exported to Ceylon and United Kingdom if the prices of foreign sugar slightly improved. Overseas markets are also essential for our surplus production. For the past 12 months, the British colonies' sugar manufacturers, who are enjoying special preference in the United Kingdom markets have shown slight uneasiness because India may get also a Quota for sugar Export to the United Kingdom market. For this reason these colonies influenced the British Government, under whose pressure our Government agreed to prohibition of export of Indian sugar overseas.

30. The final conclusions of the Committee are that protection be granted to the sugar manufacturers for the remaining period of 8 years with the following conditions:—

- (a) The manufacturers to provide dwelling quarters for their unskilled and skilled labour and minimum wage to be fixed, i.e., to unskilled labour not less than Rs. 10 per month and for skilled labour not less in future than what they pay now.

- (b) After three years there should be no foreigners in their factories as chemists or panmen or engineers or in any capacity. In case of necessity, foreigners may be employed by special sanction of the Supervision Board.
- (c) The minimum price of cane be fixed for United Provinces and Bihar at As. 4 per maund, if the price of sugar is Rs. 7-8 per maund or under *ex-Factory*. In case of higher prices of sugar the price of cane may be increased in consultation with Central Supervisory Board.
- (d) That those Mills that plant their own cane can only lease or buy land from the cultivators after the previous sanction of the Local Government authorities who will look into the interests of the agriculturists before such sanctions.
- (e) That the qualities of sugar be graded and standardised and only sold on Indian Sugar Standards and not in anyway otherwise.
- (f) That the terms of selling contracts shall be uniform, just and fair and designed to improve the co-operation of the trade.
- (g) That protection be accorded as mentioned hereafter subject to the appointment of a permanent supervision Board consisting of members paid and honorary, including sugar Technologists, Expert in manufacturing of sugar and experienced in agriculture, Bankers, Industrialists, Sugar merchants and the elected members of the legislatures to supervise the working of the Act and to protect the consumers, labour, agriculture, trade and all interested.
- (h) That reliable forecast of the cane cultivation and crop estimates and statistics of actual deliveries of sugar be regularly published every fortnight.
- (i) That packing must be uniform. Every bag to contain 2 maunds 28 seers in a bag nett sugar, packing to be of double gunny bags.
- (j) That protection be accorded by reducing the import duty to Rs. 7-4 per cwt. subject to the following conditions: (1) that the Excise Duty is reduced to Rs. 1-4 per cwt., (2) that the protection is maintained throughout the next protection period by raising or lowering the import duty as may be necessary by the effect of the prevailing prices of sugar at any time during the protection period, such alterations being made under the advice of the Supervision Board, (3) that the margin of protection shall never be reduced below the figures suggested above.

NOTE.—The reduction of Excise Duty is suggested for preventing the growth of the sugar industry in Indian States.

The Excise Duty on sugar refined from "gur" be reduced to half of the present level, and that on Khandsari sugar to be removed.

REPLIES BY THE CENTRAL COMMITTEE OF THE ALL-INDIA SUGAR MERCHANTS CONFERENCE, CAWNPORE, TO SOME OF THE QUESTIONS FROM THE QUESTIONNAIRE ISSUED BY THE TARIFF BOARD.

The Central Committee of the All-India Sugar Merchants' Conference, constituted for the Tariff Board Representation, have selected the following questions for representation to the Tariff Board. The Questions are taken from the General Questionnaire issued by the Tariff Board.

The Central Committee would state that they have given their views in this representation by statement of the conclusions, and have left the details for oral evidence.

8. The Committee understand that a complete sugar factory was built in the Calcutta Fundry and this factory is working satisfactorily in Meerut.

9. The Committee would state that Sugar Merchants are satisfied with

the assistance given by the Director of Imperial Institute of Sugar Technology in preparing the Indian Sugar Standards.

22. Compulsory acquisition or leasing of land from cultivators is impracticable, but in the Deccan, owing to serious depression, the agriculturists were forced by the circumstances to give their land on twenty years' lease at very low rental, say from Rs. 8 to Rs. 10 an acre in the Canal Area. In 1925, the rental was from Rs. 50 to Rs. 70 an acre. In future, before entering into a lease with a farmer, the factory should satisfy the local Government that the rental is fair and that the Terms of the lease are also fair. Then with the sanction of the Government, the factory may be allowed the lease of the land.

22. (b) The Committee would state that Sugar Merchants are in favour of Zone system, as it will bring about improvement of quality of sugarcane, and limitation of the production of Sugar. It will restrain wide fluctuations of price, and will stabilise the trade and the Industry.

23. The Committee are of opinion that the Mills should give assistance as that suggested in the question. If such help is not forthcoming voluntarily, it should be made compulsory.

24. (a) In the opinion of the Committee, if quotas are allotted to various Sugar Mills in India, it is likely to stabilise the Industry. The idea implies that the total quantity of sugar that can be produced in India could be limited to a certain quantity and that it would be desirable to do so. The Committee consider that the interests of the Sugar Industry and Trade require that the production should be limited to the actual requirements of the country. It is recognised that the total quantity of Indian Sugar that is consumed will tend to fluctuate under the influence of various changing factors, and the production maximum will have to be regulated accordingly. The fixation of the production minimum will have therefore to be periodical. Since the sugarcane crop and sugar production season are annual, the production, maximum will have to be fixed annually.

Every year, at the close of the consuming season, in September/October, it should be possible to calculate figures of actual consumption from November to October of the last year, and the balance, if any, which may be expected to be carried forward. Deducting this balance from the estimated quantity of consumption for the following year, the production maximum for the whole season may be fixed.

The basis of distribution of quota should be the production of every Mill in the season 1936-37, since this year has been the peak year of production of sugar. A margin of 5 per cent. extra should be allowed. If the output of a Mill exceeds the margin, the sale of the excess sugar should be subject to the permission of the Supervision Board.

The advantages of allotment of quotas would be that it will prevent internal competition, and will stabilise prices.

24 (b). Licenses of new factories are necessary and no licenses should be given for a new factory in the United Provinces and Bihar and no factory should be allowed any new extensions of capacity.

66. More than 30 per cent. of sugar deteriorated in the United Provinces and Bihar. The last season revealed that the causes of such deterioration were bad storing and bad qualities of sugar. In many factories, they overcrush and do not properly dry or cool before packing. Therefore, in future, no factory should be allowed to overcrush more than the capacity.

67. The factories generally with some exceptions delivered such damaged sugar to merchants as sound sugar against their contracts as has ruined the whole trade.

68. If properly made, the quality will stand the climate and unnecessary losses will be stopped.

69. During the monsoon season, sugar from factories of the United Provinces and Bihar was damaged 50 to 70 per cent. in transit by Railway, chiefly due to 25 per cent. damaged sugar being put in wagons, which came

in contact with undamaged bags and spoiled the undamaged bags as well. Some sugar also got damaged at the Junctions. In the Steamers, every consignment gets sweat damage. Owing to special Railway freight, the Railway authorities do not accept liability. The factories generally keep the Railway staff in hand and get the proper Railway Receipts. Also the Terms of the Contract are such that the whole burden of such damage falls on the trader who is now ruined owing to the above reasons.

70. Wagon supply is most irregular and the trade has suffered severely. Sometimes the wagons are not available for some destination for a month or so, with the result that the trade has to suffer.

71. Railway wagons for sugar should be air-tight and water proof.

72. Rates of Indian sugar during the last five years in Bombay are enclosed herewith in Tables A and B.

79. The Committee consider 10 per cent. maximum as the fair return.

83. The principal Markets of Sugar in India are Cawnpore, Bombay, Calcutta, Madras, Karachi, Cochin, Ahmedabad, Amritsar, Hyderabad, Delhi, Nagpur Muzaffarnagar, Mir Kadim, and Bhairab.

84. The usual arrangements in the sale of Sugar between Manufacturers and dealers are through selling agents. Most of these selling agents are ignorant of Indian Sugar business. In some cases, selling agents are created by private partnerships of the Managing Agents or from their relatives and friends. Generally, the Mills are influenced by the amount of money that a prospective agent can offer to the Mill as Deposit, irrespective of the qualifications of such Agent for Sugar Trading. Such ignorant selling agents or middlemen have hampered the improvement in qualities, in revising terms and conditions of the Contract and full flow of the trade. Recently the tendency of the factories under European management is to appoint European selling agents at very high rates of commission, even though such selling agents have no previous experience of dealing in Indian Sugar. These people have acted with the buyers and dealers always with prejudice against Indian business morality, and have their own contract forms, the conditions of which are all based on mistrust of the buyers. The merchants, although unwilling, are forced to deal with such agents. Under the circumstances and by getting such merchants to sign their contract terms, they have brought about demoralisation among the sugar merchants. In order that their terms may be accepted, some are giving double the brokerage to their brokers to work as a further middleman between selling agents and merchants. By giving such higher rates of brokerage, the uniform and established rate of brokerage is broken, and the result in future may be serious to the trade. It is the inherent right of the Indian Merchants to work as distributors between factories and dealers, a right which is in serious danger. The principle of protection that the nationals of the country should always benefit is prejudiced and endangered by such appointments. In our All-India Sugar Merchants' Conference at Cawnpore, a merchant brought a resolution protesting against this granting of selling agencies to European firms but we as merchants at that time thought that this might result in a race and colour question at present, and our main issue of contract terms may be shelved. We thought it therefore advisable to keep it pending till the enquiry of the Tariff Board began. A condition is absolutely necessary before granting further Tariff protection that the selling or distributing of sugar, or working as the connecting link between the Mills and their buyers should entirely be in the hands of Indians.

The Committee will also invite the attention of the Tariff Board to a new feature of the selling arrangements of the Mills that has developed since the last season. Owing to the depression caused by the selling policies of the Mills, and to the unexpected losses that were caused to the big dealers in Cawnpore, Bombay, Calcutta, Amritsar and all other Markets, the latter were not inclined or willing to do big business in Sugar, with the result that several of the Mills opened their agencies or sale Depôts at the principal centres, and from there, they supply the goods to small dealers at various stations. In other words, the Manufacturers have been, for the sake of

disposal of their goods, directly dealing with the smallest centres. As such, the influence of the big merchants has weakened.

Big dealers supply the goods to the retailers on credit system, which facility generally is not being given by the mills.

Between the wholesalers and retailers, sales are effected through brokers, travelling canvassers and correspondents, and direct when the small retailer comes to the distributing market and makes the purchases himself.

85. The matter of a uniform contract or a standard contract for dealings in Sugar has been one of the principal difficulties of the sugar trade, and the subject has been fully dealt with in the Second Annual Report of the Cawnpore Sugar Merchants' Association (year 1935-36) and in the Report of the All-India Sugar Merchants' Conference, and reference is invited to both of these Reports, ten copies of each of which have been supplied to the Tariff Board.

These Reports state the progress of the matter up to November, 1936, and since then, the development has been that a Conference between the Contract Committee of the All-India Sugar Merchants' Conference and the Committee of the Indian Sugar Mills Association was held at Calcutta on the 21st January, 1937. Eight copies of the minutes of proceedings of the above Conference are enclosed herewith for the information of the Tariff Board. Copies of the correspondence subsequent to the January Conference are also enclosed as showing the attitude of the Mills' Association in this respect.

It is to be noted that there are other Sugar Mills' Associations in India than the Indian Sugar Mills' Association, but these did not feel it necessary to hold any consultations with the trade Associations.

One particularly noteworthy fact about the Indian Sugar Mills' Association is that any arrangements made with that body have no guarantee or even likelihood of being adopted by its members. The Association serves more as an advisory body making recommendations to the member Mills than an organisation of the Mills, whose decisions may be understood to be the decisions of all the members. These recommendations are considered by the Mills as pious wishes to maintain appearances, and not to be followed. In more instances than one, decisions arrived at by the Indian Sugar Mills' Association have not been followed up by the Member Mills. In the matter of the Standard Contract, the form of Contract agreed upon between the Contract Committee of the All-India Sugar Merchants' Conference and the Committee of the Indian Sugar Mills' Association, subject to the difference of opinion about the proviso to Clause 8 of the Contract form has not been adopted by any Sugar Mill in India.

The Conferences held in July, 1936, and in January, 1937, and the subsequent correspondence show the need of a compelling measure which will meet the difficulty of the traders once for all. While the Industry remains protected, and the Industry and the Trade are left to themselves, such compelling measure may take the form of a ceaseless struggle between merchants and manufacturers, resulting in loss to both. In fact, a kind of hostile feeling has been continuing for long, and in the circumstances, the Committee represent to the Tariff Board that they would recommend to the Government that the matter is one which requires action by them. If the Industry were not protected, the competition with foreign sugar should provide the necessary incentive to have fair dealings with the traders. But while the Industry receives protection, and imposes a burden and a sacrifice on the general community, it has no right to content itself with measures of pure self-interest, and must devote equal care to the interests of the other sections of the community that are affected. Where such action is not possible direct from the Industry itself, the Government would have to step in and provide relief to the sections which are not fairly treated. Such action has already been taken in the case of the cane-growers, and the reason why the cause of sugar merchants has not received public attention is that for a long time sugar merchants have not been organised, and have

not stressed fair dealings to themselves from the Mills. They have hoped for justice to come from the manufacturers in the larger interests of the Industry. Only when it has failed and hope no longer can be entertained of manufacturers adopting action that would make it compulsory for the Mills to adopt a common standard form of Contract for the sale of Indian Sugar.

The Committee will invite the particular attention of the Tariff Board to the fact that all along representatives of the Sugar Trade have stressed two important facts, namely, that an equitable standard form of contract is desired in the ultimate interests of the Industry itself, and secondly, that merchants desire a form of contract based only on equity and fairness, which would give them a good value for the money they invest. This will be borne out by the correspondence submitted herewith, particularly by the proceedings of the All-India Sugar Merchants' Conference.

It may be stated that the matter of the Standard Contract is one to which sugar merchants attach the greatest importance, and if action is taken which would meet their viewpoint, irrespective of whether that action proceeds by the Government's initiative or by the initiative of the manufacturers themselves, a weak point in the marketing of Indian Sugar will have been removed.

86. The required Tables of prices are submitted for Bombay.

87. The Committee will emphatically repudiate the suggestion that there are wide fluctuations between the wholesale and retail prices of sugar. They have considered such fluctuations in the various markets of the country, and find that they are nominal, such as are necessary for the maintenance of the two classes of the Sugar Trade. There might be exceptions of a temporary shortage or corners, but these are as a rule exceptions, and now occur very rarely.

The Committee would state that Sugar Trade is carried on on a very low origin, particularly in markets with a good distribution. The gross profit in certain sugars is nine pies per bag to the wholesaler and slightly higher for the retailer.

The unsystematic selling of the factories has ruined the wholesaler and the retailer, both.

88. The storage arrangements of dealers are of two kinds. In the interior markets, every dealer has his own godown, where the stocks of sugar are stored. This is generally pucca. In Port Markets, dealers put their stocks both in their own godowns and in public warehouses, like the bonded warehouses and the Clearing Agents' warehouses.

With regard to the public warehouses, the Committee would state that the tendency to maintain stocks of Indian Sugar at the Port Market is increasing, and a larger use of these warehouses (public warehouses) is being made for this purpose. In some Markets, the storage rates are high, and these should be reduced in the case of Indian Sugar. The public warehouses in some of the Port Markets are not good for keeping stocks of Indian Sugar. These should be so improved as to effectively prevent the Sugar from being affected by Monsoonish and other atmospheric influences.

89. Most of the Indian Sugar deteriorate more rapidly than the Java and other imported Sugars. This year there has been some improvement in quality but we doubt whether this Sugar will stand the monsoon.

The Committee would state that early deterioration of the quality of Indian Sugars is the principal factor which is responsible for the big dealers having been put to great loss. The Mills cared very little about the quality after they had secured big contracts at high prices, particularly because there was no fixed standard quality. The Committee is emphatically of opinion that it is now high time that the quality should be standardised as in the case of the Java Sugar, and all Sugar Factories as are enjoying protection must, as a rule, be required to produce Standard Qualities. This is the first and foremost need of the present time.

90. The Committee would state that the Java and other imported Sugars are preferred by high class sweetmeat makers and hotels because they are cleaner, more uniform in quality, and because they stand well in all weathers. The general public favours Indian Sugar as against the foreign sugars on account of the prevailing Swadeshi sentiment.

91. About 40 per cent. of the Indian Sugars manufactured in season 1936-37 are equal to the quality of the Java Sugar No. 25 Dutch Standard or equivalent imported sugars. The remaining 60 per cent. Sugars are inferior in colour, grain and keeping capacity.

92. The Committee would point out that the season of manufacture of Sugar now extends to six months, and not to one-third of the year, as stated in the Question.

The problem of carrying stocks after the Manufacturing Season has arisen only from the Season 1935-36, and Manufacturers have to keep in stock the Sugar manufactured by them that has not moved into consumption during the season. Such Stocks are estimated to be 90 per cent. of the Sugar that remains undelivered after the Crushing Season is over, while about 10 per cent. stocks of the total production remain with dealers, mostly in outlying Interior Markets and Port Markets. The dealers in the territory not far off from the Mills do not maintain any appreciable stocks for fear of fluctuation of prices which hits them immediately.

So far as the financing of Stocks by Manufacturers is concerned, this is done by the Banks. In some cases, where the Mills are financially strong enough, they do not take financial assistance. Dealers in small interior Markets finance their own Stocks, but in the Port Markets and bigger Markets, they utilise the assistance of the Banks and other financial agencies. It might be stated that financial assistance in stocking of sugar is confined almost wholly to regular banking organisations.

The usual arrangements are to allow credits up to about 75 per cent. to 90 per cent., according to the Quality of the Sugar, and to charge interest ranging from 4 per cent. to 6 per cent. per annum. The Stockists have also to maintain a cash margin, varying from 10 per cent. to 25 per cent.

94. The Committee do not favour a Central All-India Selling Organisation, but would advocate a Central Marketing Advisory Committee, in which Sugar Merchants, Manufacturers, Government Experts, and other Interests concerned with Sugar may be represented. If, however, a Supervision Board is established, the Committee would not like too many bodies with functions overlapping each other's.

95. Standardisation of Indian Sugar is most essential. The numberless qualities of Indian Sugar should be reduced to and standardised to two to three grades in grain and one in colour. Sugar up to one of these standards should be classified as Superior White Sugar, below that Standard, it should be Inferior Indian Sugar. Factories must be prohibited from delivering their Sugar as White Sugar below a certain Standard. In Indian factories, 25 per cent. of Sugars were delivered in the season 1935-36 as White Sugar, which in reality were not White Sugar. Even to-day, Sugar which is classified as Brown Sugar in Java, that is, Similar to No. 23-24 Java, is sold here as White Sugar. This is nothing less than a fraud, in quality.

Reference in this connection is invited to the Reports of the All-India Sugar Merchants' Conference and of the Cawnpore Sugar Merchants' Association (Year 1935-36), which make it clear beyond doubt that Sugar Merchants all over India have been insisting for a very long time on Standardisation of Qualities of Indian Sugar. Copies of supporting correspondence are sent herewith.

96. Not more than 2 per cent. business has actually been done on the basis of the Indian Sugar Standards, and that too, from this year. Merchants are forced to trade with Manufacturers without the Indian Standards as the majority of the latter are not agreeable to adopt the Standards.

Factories should now be prohibited from selling their Sugar without Standards. The only way of avoiding trouble between the Buyers and the Sellers and resuming honest business is fixation of Sugar Standards.

So far no Manufacturer has used the Indian Sugar Standards for grading for the purpose of marketing. The Mills might have employed them for classification and grading in their factories and laboratories but they have not made use of them for marketing and therefore the Committee cannot consider that any use has been made of these Standards for grading purposes.

97. The Committee recommend that the price of the Sets of the Indian Sugar Standards be so reduced that they may be within easy means of all. The cheapening of the price of the Sets will increase the demand for them, and thus help to increase the income from them.

98. The Committee would emphasize the necessity of a Futures Market or Terminal Market. Without that, both the Merchants and the Manufacturers are unable to hedge their stocks. The Committee would in this connection invite the attention of the Tariff Board to the Resolutions passed by Sugar Merchants' Associations and by the All-India Sugar Merchants' Conference for establishing such Terminal Markets, and the delay is due to the Manufacturers not agreeing to sell their Sugars on the Indian Sugar Standards, and to their not improving the Contract Terms.

99. The normal consumption of Sugar in India is 1,200,000 tons, with a possibility of an increase of 30,000 tons every year. Also, consumption could be increased further by proper advertisement. The Indian Sugar Mills' Association advertised this year to a small extent, but such advertisement can never help in increased consumption of Sugar. The advertisement of sugar should be on the lines of the American Refiners.

100. If the difference between the prices of Gur and Sugar are more than Rs. 3 a maund, the consumption of Sugar does not increase. Gur is never used in preparing sweetmeats.

101. There is a great scope for a subsidiary Industry which may help the consumption of Sugar, but co-operation in finance is necessary from the Manufacturers. Export avenues for the products of such an Industry must be found.

102. A table of prices of Imported Sugar in Bombay is attached herewith. Reference is invited to the Tables C and D.

103. No foreign Sugar has entered India at unremunerative prices in any year since 1930.

104. The export of Indian Sugar by land has two aspects, one of Exports to Indian States, and another of Exports to foreign countries. Political conditions are such that despatches of Indian Sugar to Indian States amount to Export. In connection with the Export of Indian Sugar to Indian States, the Committee will invite the attention of the Tariff Board to the restrictions and barriers placed by some of the Indian States on Indian Sugar. These are prohibitive in some instances, and, considering that the products of these Indian States do not have a similar handicap imposed on them in respect of their entry in British India, the Tariff Board should recommend to the Government of India to make an exhaustive enquiry, and ascertain the nature and extent of such restrictions. They should then use their influence with the Indian States to remove, or at least to reduce them. The Government of India levy on the Industry a very heavy Excise Duty, about 33 per cent. and have not only a moral obligation to allow this facility, but in the very interests of the Excise Duty Revenue, they ought to adopt immediate action in this direction.

The Export of Sugar manufactured in India by land to foreign countries is a problem for consideration of the Government. Such Export has a limited scope, and can only be in the directions of Afghanistan, Nepal, Central Asia, and part of China, North of Burma. Here the problem resolves itself into one of competition with Java and other foreign Sugars. Conditions that can enable Indian Sugar to meet such competition are Standardisation of Qualities of Indian Sugar, and lower costs of production

of Indian Sugars. When these are attained, a relatively small quantity of Indian Sugar may succeed in winning its way to the territories of the neighbouring countries. As far as Afghanistan and Nepal are concerned, a Cawnpore Buying House is already investigating the possibilities of Export of Indian Sugar to these countries.

With regard to the export of Indian Sugar by sea, the Committee enclose correspondence entered into by various Sugar Merchants' Associations emphasizing the need of such exports. So far these have been confined to Burma and to Coastal areas. But further expansion is necessary. The World Sugar Conference has ruled out, for some years at least, the possibility of such exports to any maritime country except the United Kingdom. Public opinion in India is strongly in favour of arrangements being made with the United Kingdom which will permit Indian Sugar to be exported to that country.

It is not yet established beyond doubt that Indian Sugar can be exported on its own strength, and the Committee consider that if the following conditions are fulfilled, export of Indian Sugar by sea may become possible:—

- (1) Qualities of Indian Sugar are improved, their keeping capacity advanced, and the qualities are standardised.
- (2) Efficiency of production is increased to the Standard of the Mills in Java, and the cost of production of Superior Quality White Sugar is lowered at least to such an extent that competition with foreign Sugars may become possible.
- (3) The Government helps the Trade by making such exports possible by Commercial treaties and other measures with foreign countries.

Under any set of conditions, Government encouragement and rationalised Industrial conditions will be necessary to enable Sugar Exports to be made to other countries by the sea. It does not seem possible that rational conditions in the Industry will be possible from within, and therefore the suggestion of a Marketing Advisory Committee, or, in the alternative, a Supervisory Board, dealing with this problem as well, will be a great help to this end. It has been further observed that conditions in the Industry are changing so fast that by the time any particular suggestions are studied for adoption, they might have grown out of date. Permanent machinery to cause such suggestions to be made use of with promptitude will be necessary, and the suggested Advisory Committee will met the need for the time being at least.

105. The Excise Duty imposed in 1934 had the effect of maintaining a higher price for Sugar than would have been possible without the Excise Duty, which has not been a part of the profit that would have accrued to the Sugar Manufacturer but which has been an indirect tax on the people, who have been taxed heavily and double for Protection, namely, the heavy Import Duty, now a relatively small tax, and the Excise Duty, which withheld for a time, by its effect of inflation, the free play of forces of Demand and Supply, and maintained a price of Sugar which would have fallen earlier but for the Excise Duty. Because of its effect of inflation, which was within reasonable limits, it was borne by the Industry and the Trade and the people.

The enhancement of the Excise Duty in March, 1937, is a piece of excessive inflation by high taxation. It has served to prove that the taxable capacity of the source of revenue has been overstepped. When the Excise Duty was enhanced, Consumers and Retail dealers declined to bear the burden of an increased price, and the wholesale dealer had to do the same. The enhanced rate was therefore to fall on the Manufacturer which is well borne out by the Budget Speech of the Finance Member, Sir James Grigg. The Manufacturers had to face the alternatives of closing down or working at loss. The latter alternative was out of the question, and therefore the closing down of Mills was resolved upon at a time when there was a surplus of sugarcane awaiting the purchases of the Mills. Sugarcane presented pro-

blems to the Government and the public, and the Mills secured the entreaties of the Government and the Congress to keep running for the great period possible. This was possible only by reducing the price of cane.

The incidence of the enhanced duty was thus transferred on the cane growers and the wholesalers. The price of cane had been sustained only by Government support, and once this was weakened, the movement of reducing cane prices made further progress, resulting in Manufacturers getting cane at very low prices, and reducing their costs of production at the expense of the cultivators beyond their own expectations.

Reports are current that the Manufacturers have thus made larger profits this season than in the previous seasons. These reports will require verification, but on the basis of the facts stated, they seem to be credible. On the general public, the effect has been to produce a deep suspicion of the Government's Sugar policy, and of their *bona fides* in developing the Indian Sugar industry. It has also served to promote bitterness against the Government among the cultivators.

The enhancement has therefore adversely affected in particular the cultivators of cane, for whose benefit Protection was granted to the Indian Sugar Industry.

106. There are no marketing arrangements for molasses at present, but there is a great future for selling molasses if Indian Sugar Millowners combine and start Molasses Export Co. The United Kingdom is a great Market for Molasses of Java. Hitherto, they have not cared about this, because the Manufacturers could earn huge profits from Sugar only, and could ignore the Molasses. No greater example of their inefficiency can be found than this throwing out of Molasses. Recently, an English Company has begun to export Molasses.

108. The measure of protection has been more than effective, as has been amply shown in replies to the other questions.

109. The Committee recommend Protection to the Indian Sugar Industry for another eight years. They, however, consider that protection should be conditional and should be regulated as below—

Protection be accorded by reducing the Import Duty to Rs. 7-4 per cwt. subject to (1) the Excise Duty being reduced to Rs. 1-4 per cwt., (2) Protection being maintained throughout the next Protection Period by raising or lowering the Import Duty as may be necessary by the effect of the prevailing prices of Sugar at any time during the Protection Period, such alterations being made upon the advice of the Supervision Board, and (3) the level of Protection being never reduced below the figure suggested above.

NOTE.—The reduction of the Excise Duty is suggested for the prevention of the growth of the Industry in Indian States, thus causing the ruin of the Mills already in operation.

The Committee further suggest that the Excise Duty on Sugar refined from gur be reduced to half the present level, and that the Excise Duty on the Khandsari Sugar be removed, to encourage that Industry, and to help the poor cultivators, distant from the cane areas of the Mills.

(18) *Letter, dated the 30th June, 1937, from the All-India Sugar Merchants' Conference, Cawnpore.*

REPRESENTATION OF THE CENTRAL COMMITTEE.

With reference to my various letters of the 18th instant, I am now sending herewith the following papers, which were referred to in the above letters:—

- (1) Ten printed copies of the Representation. These are being supplied to facilitate study by the Tariff Board. (Published as enclosure to letter, dated the 18th June, 1938.)

- (2) A Table of prices for Karachi, as required in Questions 86 and 102.
- (3) Six further copies of the Second Annual Report of the Cawnpore Sugar Merchants' Association. (Not published.)
- (4) Six further copies of the Report of the First All-India Sugar Merchants Conference. (Not published.)
- (5) Six copies of the Minutes of Proceedings of the Conference held on the 21st January, 1937, between the Contract Committee of the All-India Sugar Merchants' Conference and the Committee of the Indian Sugar Mills' Association, at Calcutta. (Referred to in the Conference reply to Question 85.)
- (6) Letter (in six copies) addressed by the Cawnpore Sugar Merchants' Association on the 17th May, 1937, to the Commerce Secretary, Government of India, Simla (*Vide* Conference reply to Question 104, Para. II).
- (7) Six copies of letter dated the 31st January, 1936, addressed by the Sugar Merchants' Association, Bombay, to the Indian Sugar Mills Association, Calcutta, being part of the printed Representation.
- (8) Copies of the Correspondence referred to in Para. 18, page 8 of the General Representation in the Printed book form.

TABLE OF PRICES FOR KARACHI.

86. There is very little or no difference between wholesale and retail prices, that is to say between prices for 5,000 bags or 5 bags. We are supplying here figures of 2 years, but the rest can be had from the Director, Imperial Institute of Sugar Technology, Cawnpore:—

1935-36—	Per cent.						
	Rs. A. P.				Rs. A. P.		
Java whites	12	15	0	to	14	7	6
British refined	13	0	9	„	14	8	0
Motipur AA	13	3	6	„	14	1	0
„ AAI . . . . .	...				12	14	0
Lohat, Sakri	12	14	0	„	14	1	0
Marhowrah	13	2	0	„	14	5	0
Champaran							
1936-37—							
Java whites	13	4	0	„	12	15	6
British refined	13	5	6	„	13	4	9
Ditto (March '37)	13	7	9	„	13	12	0
Motipur AAI	12	12	0	„	10	8	0
Babhnan	13	2	0	„	11	14	0
Balarampur	13	1	0	„	11	14	0
Champaran	12	15	0	„	11	15	0
Lohat	12	6	6	„	11	1	0
Hathna	12	14	0	„	10	10	0
Hargaon	12	0	0	„	11	1	0

		Per cwt.	
		Rs. A. P.	Rs. A. P.
102. We give below cif quotations:—			
1931-32—			
Continental D/bag	. . .	5 4 2	to 6 0 6
Ditto S/bag	. . .	5 4 3	„ 5 9 3
Java whites	. . .	5 3 7	„ 6 1 2
British refined	. . .	5 3 9	„ 5 10 2
1932-33—			
Continental D/bag	. . .	4 10 2	„ 5 0 9
Ditto S/bag	. . .	4 10 2	„ ...
Java whites	. . .	5 6 10½	„ 4 11 0
British refined	. . .	4 12 8	„ 5 6 1
1933-34—			
Continental D/bag	. . .	5 5 2	„ 4 4 1½
Java whites	. . .	5 2 6	„ 4 1 6
British refined	. . .	5 0 6	„ 4 14 6
1934-35—			
Java whites	. . .	3 15 6	„ 3 12 0
American Granulated (this was not imported)	. . .	5 0 6	„ 4 4 0
1935-36—			
Continental S/bag	. . .	4 2 7	„ ...
Java whites	. . .	3 14 0	„ 5 1 6
British refined	. . .	4 7 6	„ 3 14 5
1936-37—			
Java whites	. . .	4 4 0	„ ...
Import Duty:—Rs. 9-1 per cwt. throughout.			
Landing charges—As. 2 per cwt.			

(True Copy.)

INDIAN SUGAR MILLS ASSOCIATION.

135, Canning Street,
Calcutta,
dated 22nd January, 1937.

Proceedings of a Conference between the Committee of the Indian Sugar Mills Association and the Contract Committee of the All-India Sugar Merchants' Conference, held at Calcutta, on 21st January, 1937.

PRESENT.

Sardar Kripal Singh . . .	}	On behalf of the Indian Sugar Mill's Association.
Mr. J. M. Lownie . . .		
„ D. P. Khaitan . . .		
„ C. A. Carmichael . . .		
„ D. Khaitan . . .		
Rao Saheb R. D. Naik . . .	}	Representing the Bombay Sugar Merchants' Association.
Mr. R. Ananthasubramanyam . . .		
„ R. J. Clough . . .	}	Representing Cawnpore Sugar Merchants' Association.
Jagjiwan Ujamshi Mulji, Esqr. . .		
Sankalchand G. Shah, Esqr. . .		
Mr. Pran Nath Sahgal . . .	}	Representing Calcutta Sugar Merchants.
„ S. J. Pagey . . .		
„ Pyaraylal Bhuraria . . .		
„ Liladhur Rastogi . . .		
„ Santosh Kumar Sreemany . . .		

Sardar Kripal Singh, President of the Association, who was in the Chair opened the proceedings by welcoming the Merchants representatives to the meeting and expressed a hope that the deliberations of the Conference would lead to a successful result. Mr. J. U. Mulji, on behalf of the Merchants' representatives, reciprocated by a suitable reply and assured the Conference that the Merchants' representatives had come there in a spirit of co-operation to arrive by mutual discussion to an agreed form of Contract.

It was agreed that discussion should first proceed on the important clauses of the Contract after disposing of which the other clauses should be taken up *ad seriatim*.

Clause 8.—Of the present contract form of the Association dealing with quality was then taken up, and after full and frank discussion on the matter, it was agreed that the 1st part of Clause 8 should be modified as follows:—

“The quality of the sugar to be tendered by the Seller to the Buyer shall be fairly similar to the basis of sale.”

With regard to the proviso of Clause 8 of the contract form, the Buyers' representatives agreed to the retention of the latter part thereof dealing with changes that may occur during transit. They further agreed that it should be optional by agreement between Buyers and Sellers to insert the other part of the proviso.

So far as the manufacturers' representatives were concerned, they promised to refer the matter for consideration to the Members of the Association.

The next point discussed was with regard to Arbitration. In this connection it was agreed that Clause 17 (given in Appendix) of Bird & Co.'s Sugar Contract form relating to quality arbitration should be adopted for all Arbitrations in place of the existing Clauses 18-A and 18-B of the Contract form of the Association, subject to the further modification that the two arbitrators will appoint an Umpire before entering upon the reference.

The above two important matters relating to “quality” and “arbitration” having been decided, the remaining clauses of the Contract form were discussed *ad seriatim* and the following decisions were arrived at:—

Clause 2—Tender.—It was agreed that provision should be made in the Clause to the effect that in the case of delay in tendering due to booking restrictions or non-supplying of wagons the factories would attach a letter to the R/R mentioning the cause of the delay.

Clause 3—Payment.—The merchants' suggestion for charging interest at the rate of 6 per cent. per annum instead of $7\frac{1}{2}$ per cent. under this clause was accepted.

Clause 7.—It was agreed that instead of provision of a charge of “6 pies per bag per month or part of a month” as godown rent and of “3 pies per bag per month or part of a month” for insurance, a charge of “6 pies per bag per month or part of a month” should be provided for, for both godown rent and Insurance.

Clause 9—Packing.—It was agreed that—

- (a) after the words “all goods to be packed in” the word “new” should be added.
- (b) instead of the letters and signs “46" × 26½”,” “44” or 46" × 26½”” to be substituted, and
- (c) The words “any such other packings” in the second line to be deleted and the words “double bags” to be substituted in place thereof.

Clause 11—Complaints.—It was agreed that a provision be inserted in the clause to the effect that no complaints will be admitted unless the goods have been paid for by the Buyer to the Seller.

Clause 17.—It was agreed that the words “Customs or” appearing in the first line be deleted.

Mr. Jagjivan Ujamshi requested that the Indian Sugar Mills' Association should circulate to its members as regards the desirability of supplying samples of Sugar to the Merchants' Associations.

The President, in the end, expressed his satisfaction at the successful conclusion of the Conference and thanked all those present, particularly the representatives of the Merchants for the trouble they had taken in coming to attend the meeting from distant places like Bangalore, Bombay, Cawnpore, etc. The President hoped that as a result of the successful termination of the Conference, business in Sugar would proceed on normal and healthy lines.

Mr. S. G. Shah on behalf of the Merchants reciprocated the good wishes and the meeting then terminated.

N.B.—Particular Clauses of the Contract form in which modifications have been agreed upon are given in the accompanying Appendix as underlined.

S. R. DHADDA,
Offg. Secretary.

APPENDIX.

NOTE REGARDING THE VARIOUS CLAUSES OF THE CONTRACT FORM AS AMENDED AT A CONFERENCE HELD ON THE 21ST JANUARY, 1937. THE AMENDMENTS ARE SHOWN IN ITALICS.

Clause 2—Tender.

"Delivery is to be made f.o.r.....Station or seller's factory siding. The Sugar is to be tendered by the Seller at the station or siding aforesaid for despatch, such tender to be deemed to have been made if a Forwarding Note is sent to the Station Master of such station: An endorsement by the Station Master of the Station on such Forwarding Note being conclusive proof of such tender. The Seller shall not under any circumstances whatsoever be in any way responsible for the non-despatch or refusal to despatch or any delay in the despatch of any consignment by the Railway Company for any cause whatsoever. Should any such delay occur the Buyer *agrees* to take delivery of such sugar when given without claiming any allowance or damages from the Seller."

In cases of delay due to non-supply of wagons or booking restrictions, the Seller shall attach a letter mentioning the cause of the delay to the R/R.

Clause 4—Payment.

"Payment of the value of the sugar at the contract price is to be made in cash to the Seller against delivery of the railway receipt within 3 days of notice that the receipt is ready to be delivered. Should Railway receipts be delivered through bankers, or, where such can not be effected, through other collecting agents approved by the Seller payment shall be made in cash to them and all collecting charges whatsoever made by them shall be paid by the Buyer. Should there be any delay in paying for railway receipts beyond the period of three days mentioned above, the Buyer will pay the Seller interest at the rate of *6 per cent.* per annum for such delayed period without prejudice to the Seller's rights."

Clause 7—Appropriation and Godown rent.

"The Seller shall be deemed to be authorised by the buyer to assent on behalf of the Buyer to any appropriation at any time of goods from stock or from Factory to this contract, whether during continuance of the contract or after any default, by the buyer under any of the clauses of this contract. After the date on which goods are due for delivery

ex-factory the goods if appropriated shall remain at the Buyer's risk and whether appropriated or not the Buyer shall from the due date or dates for delivery pay to the Seller in respect of the quantity sold under this Contract *as godown rent and Insurance charges a sum equal to six pies per bag per month or part of a month until delivery ex-factory from stock and shall bear all losses arising from difference in weight and/or depreciation or change of condition of the goods, during transit (or due to the inherent qualities thereof or atmospheric influence or other causes over which the Seller has no control).*

Clause 8—Quality.

"The quality of the goods to be tendered by the Seller to the Buyer shall be fairly similar to the basis of sale, provided that the Seller shall not be responsible for the changes that may at any time occur in the appearance, grain or colour of the goods, during transit (or due to the inherent qualities thereof or atmospheric influence or other causes over which the Seller has no control).

The portion within brackets was agreed to be left to be inserted at the option of the Buyers and Sellers at the time of making the contract.

Clause 9—Packing.

"All the goods to be packed in new single jute bags known as "A" Twill bags of "44 or 46" x 26½" with a capacity of 2½ maunds/2 maunds 28 seers 12 ch. per bag or with such other capacity as the Seller in his discretion may decide to utilise or in double bags. Every bag to be stamped with a serial number and the mark of the factory where manufactured and the grade of the sugar and the string closing the mouth to be sealed should it be considered by the Seller necessary to do so."

Clause 11—Complaints.

"No complaints as regards description, quality or condition of any consignment will be admitted unless the buyer has previously paid for the goods to the Seller and unless the complaint is made in writing to the Seller within seven days from the arrival of such consignment at destination, the date of such arrival being deemed to be the date of arrival entered in the Books of the Railway Company or port authorities."

Clause 17—Change in duty.

"In the event of any duty of excise on Sugar being imposed, increased, decreased or remitted after the making of this contract where duty is not now chargeable or where duty is now chargeable":—

(a) and (b) as per our present contract form no changes.

Clause 18—Arbitration.

"In the event of any dispute arising under this contract as to the quality or condition of the goods, the matter shall be submitted to an arbitrator who shall be appointed with the mutual consent of the Sellers and Buyers and his decision shall be final and legally binding. In the further event of the Sellers and Buyers being unable to agree as to an arbitrator, one arbitrator shall be appointed by each of the parties and the award of these two Arbitrators shall be final and legally binding. These two arbitrators shall before proceeding to consider the matter under dispute, first appoint a Umpire, whose decision is to be final in the event of any disagreement between them. If one party fails to appoint an Arbitrator for seven clear days after the other party, having appointed his Arbitrator, has served the party making default with a written notice, the party who has appointed an Arbitrator may appoint that Arbitrator to act as sole Arbitrator and his award shall be binding on both parties as if he had been appointed by consent. If the two arbitrators are unable to agree upon the appointment of an Umpire,

the Umpire shall be nominated by the President of the.....Chamber of Commerce.....and the decision of such Umpire shall be final and legally binding. The Buyers and Sellers agree that all such disputes are to be settled at.....

Letter, dated the 17th May, 1937, from the Cawnpore Sugar Merchants' Association, Cawnpore to the Commerce Secretary, Government of India, Simla.

RE: EXPORT OF SUGAR FROM INDIA.

I am to invite the attention of the Government of India to the following telegram addressed on the 8th instant by the Sugar Merchants' Association, Bombay, to the Hon'ble the Commerce Member of his Excellency's Executive Council:—

“Sugar Merchants' Association, Bombay, strongly protests against agreement reached at International Sugar Conference in London to the effect that India should prohibit export of her sugar to overseas. The said decision is not only unjust and unfair but is arbitrary and Indian interests are sacrificed in interests of colonies.

President,

BOMBAY SUGAR MERCHANTS' ASSOCIATION.”

2. This Association wholeheartedly supports the protest wired by the Bombay Sugar Merchants' Association, and wishes the following representation to be submitted to the Government of India for their careful consideration.

3. It would not be out of place to invite the attention of the Government of India to the suspicion with which the World Sugar Conference is looked at from the very beginning. This was due to lack of information about the Conference, for which the Government are to some extent responsible. Though they participated in the Conference, the fact was not published in India, and the Federation of Indian Chambers of Commerce and Industry passed a resolution protesting against non-participation of India in the World Conference. It is only now that the fact has been published that in the absence of the High Commissioner for India from London, the Conference was attended on behalf of this country by Dr. Meek, formerly Director General of Commercial Intelligence and Statistics.

4. It is surprising that at such an important Conference, where other countries were represented by some of their most responsible authorities, as, for instance, Mr. Norman Davis representing America, the Government of India should failed to secure their representation by a responsible leader of Indian Commercial opinion. This is quite in contrast with the procedure followed by the Government of India in the trade pacts negotiations with Japan and the United Kingdom. While the negotiations with Japan were proceeding, regular panels of non-official advisers were appointed, and in the same way, Indian Commercial opinion has been taken into confidence in negotiating the revised pact with the United Kingdom, and the procedure has reassured public opinion generally. But it is difficult to appreciate why the same procedure was not followed in the case of the World Sugar Conference. The Indian legislature was in session when the Conference was decided on, and when the representative's name would have been given, but the legislature was not consulted at all that the Government of India were to be represented at the World Sugar Conference. In this connection, I would again invite the attention of the Government to the following resolution

passed at the Second Annual General Meeting of the Association, held on the 21st March, 1937:—

Resolution No. 14.—“THIS GENERAL MEETING OF THE ASSOCIATION REPRESENTS TO THE GOVERNMENT OF INDIA THAT IF INDIA PARTICIPATES IN THE WORLD CONFERENCE ON SUGAR NO AGREEMENT BINDING INDIA SHOULD BE ARRIVED AT WITHOUT CONSULTING THE INDIAN LEGISLATURE AND PUBLIC OPINION IN INDIA.”

5. The Government of India must now be informed of the hostile feeling aroused by the result of the Conference, as far as it relates to India. The press in India has unequivocally condemned it, and commercial bodies have not been slow in expressing their opposition to the undertaking given in the Conference on behalf of the Government. Though *prima facie* the *status quo* is maintained, it must be considered that for the last three years the Indian Sugar Industry, and the public in India, has been looking to having an opportunity to export the Indian surplus sugar to other countries. The Government have not declared it to be their policy that such exports will be contrary to their sugar policy, and in the absence of such a declared policy, the leaders of the Indian Sugar Industry have been making efforts to obtain the opportunity of shipping the surplus to overseas particularly to the United Kingdom. They have been looking on for this opportunity as natural and legitimate scope for expansion of Sugar Industry in India. In its last meeting, the Federation of Indian Chambers of Commerce and Industry passed the following resolution (meeting held on the 8th April, 1937):—

Resolution moved by Mr. K. C. Thapar, Part (B).—“THE FEDERATION FURTHER URGES THE GOVERNMENT OF INDIA TO TAKE STEPS SO THAT SUGAR MAY BE EXPORTED FROM INDIA INTO THE UNITED KINGDOM, FREE OF DUTY, OR AT LEAST ON PAYMENT ON THE SAME RATE OF DUTY AS ON CERTIFIED COLONIAL SUGAR.”

If the understanding given to the World Conference on behalf of the Government of India is a reply to this demand which my Association hopes it is not, it is bound to create much disappointment in the country, particularly in those parts of it, which are large sugar producing areas.

6. If the production of sugar in the season 1936-37 could be considered the highest that would be allowed, to check unnecessary overproduction, the exportable surplus is calculated to be not more than 200,000 tons. This is all the sugar that is really surplus to the requirements of the country. For the export of such a quantity, there was no need for the Government of India to be anxious to “prohibit” its export from India. It could easily have been absorbed if given conditions that would have allowed it to be exported. A careful study of the quotas allowed to various countries for export shows that a small sacrifice on the part of each country in the World Conference would have enabled the Conference to allot a relatively small quota of 200,000 tons to India.

7. I would further invite the attention of the Government of India to the undertaking to “prohibit” the export of Sugar from India to all the countries except to Burma. If the undertaking had been only that India will respect the quotas allotted to various countries, it would have been the same thing, and would have been as objectionable, but not content with an assurance that would have been positive, the Conference succeeded in securing from the representative of the Government of India an undertaking that lest there might be some exports by further progress of the Sugar Industry in India, its exports were to be banned altogether by specific Government action. The Government will appreciate that exports of sugar cannot be classed together with exports of opium, and if they agree to carry out the assurance of their representatives, they will be taking action which will have no support in the country and will be unjust and inequitable. Prohibition of exports has a penal or cautionary significance attached to it, and since there could be no cautionary significance while the country

produced more sugar than it could consume, the penal element attached to it will cause deep resentment.

8. Assuming without accepting that it might be desirable to withhold exports of sugar from India, it might be pointed out at present there is little possibility of such exports. It would be with facilities and encouragement that exports in competition with foreign sugar, which is of much superior quality, might be possible. So long as these are not forthcoming, any talk of prohibiting Indian Sugar from export in beating in the air, and causing merely unnecessary exacerbation of feeling. It is not only premature, but definitely unadvisable. I might state, however, that in saying this, I am not to be understood to be advocating direct or indirect restriction of export of sugar from India.

9. My Association hopes that the Government of India will realise the inadvisability of ratifying the undertaking given by their representative in the World Sugar Conference, and will reassure public opinion by announcing that there is no intention of prohibiting exports or of restricting them in any way for the time being, at least, until the Tariff Board has reported.

Letter, dated the 31st January, 1936, from the Sugar Merchants' Association, Bombay, to the Indian Sugar Mills' Association, Calcutta.

On behalf of the Sugar Merchants' Association, Bombay, I beg to draw your attention to the various shortcomings of the present organisation of the Sugar trade and the grave disadvantages under which the members of my Association have to labour at present. My Association feels keenly that owing to these difficulties, interests of Indian Sugar Manufacturers are very much hampered and at their cost foreign sugar is enabled to strengthen its position. In short, owing to these handicaps merchants and manufacturers are not able to take full advantage of the situation though enterprising and important members of my Association have already opened their offices at Cawnpore and are operating on a very large scale.

Now large production of Sugar is distributed through the ports on account of the special railway rates and steamer rates prevailing. If full advantage is taken of the facilities available, there is a reasonable possibility of shutting out the entry of Java and other foreign Sugar until 75 per cent. of the Indian production for the season is consumed. While Bombay is the main trading centre for all imported sugar for the whole of Western India, owing to the unsympathetic attitude and the indifference of the Indian Sugar Manufacturers, it does not enjoy the same position with regard to Indian sugar, not at least for the whole of the Western Coast. The importance of Bombay as the principal centre for sugar may be gathered from the fact that 90 per cent. of Java and other imported sugar for West Coast of India is marketed through Bombay, that almost all merchants trading in the West Coast have their offices here and that the only other important port for Sugar in the West Coast, Karachi, has sunk into a minor position and caters for Sind alone.

The weakness of this situation was painfully brought to light on the occasion of the Italo-Abyssinian dispute in September last year. The war scare created a keen demand for sugar both from traders and speculators. We could see at that time that India had already bought sufficient quantity of Java's and other foreign sugars to meet all requirements until the Indian Crop actually began to move. Consequently any further indent of foreign sugar at the time when the Indian crop was on the point of being ready would create surplus imports in excess of requirements and amount to virtual dumping. Merchants who were in regular trade, could foresee the danger of purchasing Java sugar at the time; they themselves bought Indian sugar and exerted their influence on their customers to do the same. But the existing drawbacks in dealing with Indian Sugar such as the

absence of samples, irregularity in the quality and standards and the unbusinesslike one sided contract terms deterred would-be buyers. All efforts to persuade buyers to go in for Indian Sugar failed with the result that large indents for Java, Africa and other foreign sugars were placed for October to December shipments. Nearly 100,000 tons of Java sugar, 15,000 tons of African sugar and 5,000 tons of British Refined sugar were indented at a time when actual requirements were even less than half of this amount. Not only was the sugar Industry deprived of prospective business and profits; the dumping brought down market rates to ridiculously low rates and inflicted a great loss to the trade and the industry alike. Had the Indian Mill Owners succeeded in winning the confidence of the merchants by supplying sugar of the standard quality in past season and had they co-operated with the trade by assuring the supply of required grade, this unhappy development would have been easily avoided. The conclusion is irresistible that your Association do not fully realise the unfortunate consequences of the neglect of their own interests.

Meanwhile the world statistical position of sugar, particularly that of Java has improved and has attained a satisfactory level. The price of Java Sugar continued to improve throughout the year 1935. From F. 2.85 it rose to F. 4.30 in October last and even now it is F. 4.30 per 100 Kilos which is equivalent to Rs. 4.10 c.i.f. Bombay. The Stock in Java on 1st January, 1936, was nearly half of what it was one year ago and at present it stands at nearly 1,100,000 tons. The estimated production of 1936 season is at the utmost 600,000 tons. This gives a total of 1,700,000 tons with which Java has to carry on until April, 1937, when the crop from the new cane planted in March 1936, can be ready. From this Java's own consumption requires 450,000 tons leaving a balance of 1,250,000 tons for export till 1st April, 1937. Java exported in 1935 nearly 1,300,000 tons out of which India and Ceylon took 400,000 tons (India 350,000 and Ceylon 50,000) the rest being taken by China, Japan, the Straits Settlements and other Eastern countries. Therefore even if India buy from Java in 1936 half the quantity that she bought in 1935, Java will not be able to meet the demand of other countries. Many experienced Java exporters predict that making allowance for normal exports there will not be left even an ounce of sugar in Java in the first quarter of 1937. Owing to such strong statistical position the Nivas (the single selling organisation in Java) is determined not to lower their limit of F. 4.30 for the West Coast of India even by 5 cents. Recent offers from Bombay for large quantities at F. 4.20 have been turned down. To-day the rate of Java Sugar for January c.i.f. is Rs. 4.7 per cwt. and February to March is Rs. 4.8. There are buyers of April at Rs. 4.9 and business is possible in Java even at Rs. 4.10. Colombo has actually bought February to March shipment at Rs. 4.8. This means that the rate for Java Sugar is very nearly Rs. 10 per maund f.o.r. Bombay and for forward even higher. In spite of such a fine opportunity of marketing Indian Sugar at a very good margin at the ports, Indian sugar this year is selling in Bombay at the ridiculously low rate of Rs. 9 per maund. What is it due to? Such a woeful state of things reflects the neglect on the part of the manufacturers. They have never thought of approaching the trade in a spirit of co-operation.

The members of my Association feel very strongly that glaring defects in the marketing organisation of Indian Sugar are responsible for reducing the trade to this deplorable condition. At a recent meeting of the Association it was resolved to approach your association as well as other millowners in order to appraise them of the difficulties from which the trade suffers and to seek their co-operation for remedial measures. Before coming to the main proposals, I intend to put before you some of the difficulties experienced by the Bombay merchants:—

- (1) *Information.*—Manufacturers, having made sales of their first production, did not think it worth their while to keep their buyers informed about the working date of the mill. Dealers cannot do any business if they do not know the delivery time

themselves. Members of my Association have been put to heavy loss as a result of placing orders with mills which failed to start working at the expected time, the buyers being left entirely in the dark about it.

- (2) *Samples*.—When buyers received intimation regarding the first working of a mill and were called upon to send out Challans, they were not provided with samples in spite of requests for them. Difficulties of grading in the first week may be explicable but there are cases when mills have not supplied their standard samples of qualities contracted for even long after.
- (3) *Quality*.—Some mills after having sold the first quality informed the buyers that they were not in a position to supply the same as they had not been able to standardise the first quality. Under this pretext they sold their first production at a higher price as No. 1 A, 1 B, 1½, 2, special, etc. Subsequently when the first rush of demand was met buyers were informed that the first quality had been standardised and they can send Challans as No. 1. The same quality was then supplied which had been previously sold at a higher rate. Others again produced only 2nd or 3rd grade and notified the buyers to send their Challans against their sales of first crystal which would be the first quality of the season. Some have gone so far as to deliver as first crystal qualities as low as those of Indian Sugar standard No. 15 (prepared by government Sugar Technologist). Protests have failed to elicit even a proper reply from the manufacturers and have not met with any sympathetic consideration. Surveys asked for have been refused under various pretexts and when agreed to, it has been under clause 16 of the Indian Sugar Mills' Association Contract. But Rules and Regulations for the Tribunal of Arbitration under the clause are never supplied, though asked for in writing and we are informed that the Panel of Arbitrators even does not exist.
- (4) *Delivery*.—As many mills had started crushing in the previous season before the 15th November, 1934, buyers were under the impression confirmed by brokers or their agents that these mills would start work early in November this season also. But as some mills were carrying out extensions, the owners knew that they could not start work even by the first week of December. The Buyers came to know the real state of things only when they failed to get delivery at the expected time. This lends colour to the suspicion that such an important information was kept back from the buyers in order to get higher rates. Some of the merchants in order to get immediate delivery, sent Chalani Clerks who were not given any assistance or the necessary facilities by the manufacturers. On the other hand undue advantage was taken by some of the millowners. The Clerks asked to sign that they have received delivery of the contracted quality on printed English forms, did so without knowledge as most of them did not know English. Subsequently when the goods arrived and buyers complained about the quality, they were told that their representatives had approved and signed that the quality was good.
- (5) *Weight*.—In weight there is generally a shortage of about ½ to 1 lb. a bag. As manufacturers are at great distance, it is not possible for buyers to get the shortage rectified each time or to send a complaint.

It is not intended to convey that every millowner is liable to the faults noted above. There are millowners who are wide awake to the larger interests of the industry, who are prompt in supplying information and scrupulously fair in maintaining quality and weight. The above, however, is a fair sample of the disadvantages experienced by the trade.

It is primarily in the interest of manufacturers themselves that they should satisfy the trade by eliminating completely all irregularities from the qualities supplied, by modifying the terms of the contract so as to make them fair and equitable and by co-operating in supplying necessary information. It is most desirable that regular forward market for Indian sugar should be set up at ports and that forward business should not remain confined to Java Sugar alone. This is only possible when the two main obstacles, viz., irregularity in quantity and the onesidedness of the contract are removed. There is every chance of a large forward business being carried on in Indian Sugar many months ahead as in the case of Java provided mill-owners supply their sealed samples for the season or guarantee quality according to specified numbers of the Indian Sugar standard.

My Association suggests that following changes may be made in the Contract so as to remove the complaints of the trade and to facilitate the development of forward business:—

Clause 4.—According to the 4th clause buyers have to give Chalan 14 days before the delivery period of a particular month. In practice, however, it is possible to give Chalan any time before the expiry of the contracted period. Therefore the requirement of Chalan 14 days before the expiry of contract period should be discontinued and 7 days of grace should be added to the contracted period, i.e., a buyer of January should give Chalan before the end of January, grace will be granted simply to help the trade and buyers will be bound to give Chalan by 7th of February at latest.

It is necessary to point out difficulties of the buyers for the matter of delivery, the case of foreign sugar is entirely different from that of Indian Sugar. There are large bonded warehouses at ports for foreign sugar while mills being situated in outlying villages there are no godown facilities available to the buyers after they take delivery from the mills. Therefore buyers try to dispose of to other buyers at ports where unwanted Indian Sugar accumulates.

Clause 6.—In the sixth clause the following words should be deleted:—

“Provided that we should not be responsible for the changes that may at any time occur in appearance, grain or colour of the goods due to the inherent qualities thereof or atmospheric influence.” It should be inserted instead that the sugar will be delivered according to the particular number of the Indian sugar standard. (sample)

Clause 8.—In weightment the 4th article of Java Nivas Contract should be added:—

“Drop of the Scale” when packed in bags, and after the weight of a quantity tendered has been determined, the buyer is granted $\frac{1}{4}$ lb. per bag net sugar delivered for “drop of the scale”, fractions in proportion.

Clause 16.—Clause 16 on Arbitration should be:—

“In the event of any difference or dispute arising between buyers and sellers, either in regard to quality and survey or as to the meaning, effect or right and liabilities of the buyers and sellers in reference to this contract, it shall be referred to the arbitration of two sugar merchants, one to be appointed by each party and in case such arbitrators shall not agree or fail to make an award, then to an Umpire to be appointed by them. The decision of the arbitrators or the Umpire shall be final and binding upon both parties.

If the arbitration is to be carried out by the tribunal of the arbitration of the Indian Sugar Mills' Association alone, it will fail to command the confidence of buyers, being one sided. The present rules and regulations are created to deny justice.

A contract form for Indian sugar, on which some of the members of my Association transact business with buyers is appended hereto. The adoption of this form will facilitate large forward business.

Forward business can be encouraged if manufacturers sell and distribute deliveries upto the end of the seasons to August, i.e., deliveries from November to August of the season. By spreading out the deliveries over a longer period, the pressure of supplies will be removed.

It is not in the interest of the trade or that of my Association alone that it is necessary to take immediate steps to remedy the complaints to which your attention has been drawn. It is in the large interests of your Association as well. Unless the causes for complaint are removed, the industry will not be able to reap full benefits of the high protective duty it has been enjoying. The continuation of the present state of things may well nigh force the trade and consuming interests to range themselves against the manufacturers when the next Tariff enquiry is instituted to examine the results of the first period of protection. We request a change of attitude on the part of the millowners who should henceforth try to rely upon the co-operation of the trade and consumers rather than depend exclusively upon the Government for higher and higher scales of protection. It is better to bear in mind that the present very heavy duty will not be repeated a second time when its period expires and it is high time for the trade and industry to co-operate in order to remove the obstacles that block the path of progress.

Before I close, let me say that our Association strongly supported the case of protection to the Indian Sugar Industry before the Tariff Board Enquiry Committee in 1931 and urged the imposition of a prohibitive duty although at the time all of our members were dealing in foreign sugar. The President of the Tariff Board remarked that the object of the Association of promoting their trade (of foreign sugar) would not be served by a very high duty. Immediately the member who was representing the Association before the enquiry pointed out to him the line printed in red ink upon the Association's letter paper "Advance Indian Industry."

My final request, therefore, is that the hand of co-operation offered by my Association be not lightly thrown aside.

Copies of the correspondence referred to in the representation submitted by the All-India Sugar Merchants' Conference, Cawnpore, to the Tariff Board.

Letter No. 1, from the Sugar Merchants' Association, Bombay, dated the 31st January, 1936, to the Indian Sugar Mills' Association, Calcutta—(Printed previously. Pages 399-402 and above).

Letter No. 2, dated the 23rd March, 1936 from the Cawnpore Sugar Merchants' Association to the Indian Sugar Mills' Association, Calcutta—

"I beg to refer to letter, dated the 31st January last, forwarded by the President, Sugar Merchants' Association, Bombay, to the President of your Association, a copy of which is enclosed herewith for your reference (see pages 390-402 and above).

2. At the request of Mr. J. U. Mulji, the President of the Sugar Merchants' Association, Bombay, the Committee of my Association has given careful consideration to the letter referred to above, and the views of my Committee are expressed below in brief.

3. My Committee are in general agreement with what Mr. J. U. Mulji writes in his letter and feel that the trade does suffer from the difficulties stated therein, and that it is vitally important both in the interests of Sugar Trade, and of Sugar Industry that the suggestions made therein should be adopted and the necessary action be taken as early as possible.

4. With regard to the Standard Contract, my Committee have prepared a draft contract, two copies of which I am sending herewith. This draft has been prepared in consultation with Mr. J. U. Mulji, and in preparing

it, my Committee have given careful and anxious consideration to all the interests concerned.

5. As the Terms stated in the above draft are fair and equitable, my Committee hope they will meet the approval of your Association, and that the draft would be adopted as a standard contract for dealings in Sugar, having general acceptance from all interests concerned.

6. If, however, your Committee may consider any alterations or additions desirable, my Committee will be prepared to discuss any such proposal, and I shall be pleased to receive from you the views of the Committee of your Association."

NOTE.—Draft Contract form referred to in the above letter is enclosed herewith.*

Letter No. 3, dated the 9th May, 1936, under Reference No. 768, from the Indian Sugar Mills' Association, Calcutta, to the Cawnpore Sugar Merchants' Association, Cawnpore—

"The attention of the Committee has been drawn to a circular letter issued by you requesting sugar factories to adopt your draft form of Contract for dealings in Indian sugar from the coming season. The Committee are surprised to find that while on the one hand, the matter is still under consideration of this Association and under correspondence between us and yourself and the Bombay Sugar Merchants' Association, you have meanwhile, though it fit to approach factories individually with a request to adopt your draft Contract Form. The Committee wish to point out that even of there are any points on which you think that the existing Standard Contract Form does not meet the wishes of the dealers, the proper course is to approach the Association as the Bombay Sugar Merchants' Association and yourself also have already done but not to approach the Mills directly.

The Committee are awaiting a reply from the Bombay Sugar Merchants' Association to their letter, dated 28th April, 1936, a copy of which has already been sent to you and the final decision as regards the draft Contract Form proposed by you will be taken in due course."

Letter No. 4, dated the 29th May, 1936, from the Cawnpore Sugar Merchants' Association to the Indian Sugar Mills' Association, Calcutta—

"I am in receipt of your letter No. 768 of the 9th instant, and am surprised to read its contents, written by you under the instructions of your Committee.

I may refer to your letter No. 705 to me, dated the 28th April last in which you sent to me a copy of the letter, dated the 28th April addressed to the President, Sugar Merchants' Association, Bombay. In your letter to this Association, you refer to us to your letter to the Bombay Sugar Merchants' Association, which you state also covers the points raised by us. In the above letter, referring to the needs of amending the Contract, you write under the instructions of your Committee that 'there is nothing much convincing in your letter (Bombay Sugar Merchants' Association's letter) that justifies any such changes, as the various points raised by you appear to be well covered under the different clauses of the Contract."

In view of the above opinion of your Committee, it has been felt that advising all sugar Mills of the decisions of this Association in regard to the Standard Contract will facilitate the early consideration of the matter by your Association.

My Committee consider that as the Draft of Standard Form of Contract has already been circulated to all the Mills, and as there is a very strong feeling that the dealings in Sugar for the next season 1936-37 should be on the basis of the Association's Contract Form, a Conference of all the sugar interests, particularly, the Traders and the Manufacturers be convened at an early date for the adoption of the Standard Contract.

* Not printed.

I am forwarding direct to all members of your Committee copies of the Circular letter issued by this Association together with the Draft of the Contract Form prepared by the Association, in order that the above suggestion would be considered and adopted at an early date.

A copy of this letter is being forwarded to the Indian Sugar Producers' Association, Cawnpore, for action.

I shall be glad if you will kindly place the matter before your Committee early next week, and communicate to me their reply."

Letter No. 5, dated the 12th June, 1936, under Ref. No. G/8/000959 from the Indian Sugar Mills' Association, Calcutta, to the Cawnpore Sugar Merchants' Association, Cawnpore—

"I beg to acknowledge receipt of your letter, dated the 29th May, 1936. As already intimated to you in my letter No. 768 of the 9th May, 1936, the question of the revision of the Contract Form of this Association and of making suitable alterations in it, if any are desirable, is under consideration of the Committee and in view of this fact the Committee may point out that there appears to be no necessity for you to try to prepare another Contract Form for the Sugar Trade. Your suggestions for arranging a meeting of the traders and manufacturers in this connection is also receiving attention of the Committee.

Meanwhile I may point out that though your draft Contract Form is before me it would facilitate work and be helpful if you would kindly send your various suggestions as regards the Standard Contract Form in the form of amendments to or changes in this Association's Form, as the Bombay Sugar Merchants' Association have done. In this connection, I may point out that the Bombay Sugar Merchants' Association had perhaps a copy of the old Contract Form of this Association before them while making the various suggestions as per their letter, dated the 31st January, 1936. That Form has long been replaced by the one enclosed herewith. Please refer to the enclosed Contract Form, while making suggestions for alteration and also in all future correspondence. I have brought this fact to the notice of the Bombay Association also and have sent a copy of the current form to them.

Please let me have an early reply."

Letter No. 6, dated the 23rd June, 1936, from the Cawnpore Sugar Merchants' Association, Cawnpore, to the Indian Sugar Mills' Association, Calcutta—

"I beg to acknowledge your letter No. 959 of the 12th instant, and to advise that the enclosure advised in your letter under reply has not been received here at all. I might state, however, that the Draft Contract prepared by my Association, and circulated by it, is based largely on your Association's present Contract Form, and therefore the impression that we have prepared a new Contract Form is misleading.

In regard to your request for a statement of suggestions and views of this Association as regards the Standard Contract, I might point out that our Draft already contains these suggestions in the form of amendments made by us. An explanatory statement could be sent, but my Committee consider that the matter is of so urgent and practical importance that a protracted exchange of notes between your Association and mine, with occasional intervention of the Bombay Sugar Merchants' Association, will be of a doubtful utility in the present circumstances of the Sugar Trade and Industry. Nor will it serve their future interests.

My Committee also consider that in a Conference, where all interests concerned would be represented, it will be far more easy to establish points of agreement, and to eliminate points of controversy, than in any prolonged exchanges of notes and statements. It will establish at the same time friendly contact among the representatives of the interests concerned, which will be beneficial and helpful to all concerned with sugar. I may impress, therefore, on your Committee that it will be useful to concentrate attention in this connection on my Association's proposed Conference, which should

be convened with due regard to the convenience of the Interests that will be represented at it.

In the meanwhile, if you will kindly manage to send us the views of your Committee regarding the amendments they would like to be made in the Draft forwarded by me, such suggestion will receive prompt consideration of my Committee. These will ultimately be placed before the Conference.

My Committee will be obliged to hear from you at an early date what steps your Committee proposes to take for convening a Conference at an early date."

Letter No. 7, dated the 23rd June, 1936, from the Bombay Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta—

"I thank you for your two letters, dated the 20th April, and 11th June, 1936, and feel sorry at the attitude of your Association. Your reply is not only most disappointing but has created the feelings that your Association does not desire for co-operation.

I have seen the reply of the Cawnpore Sugar Merchants' Association addressed to your President and I fully concur with their views.

Quality.—When you say in para. B that a marvellous improvement in all directions regarding quality is made by the Mills, I beg to say that except the Mills under Messrs. Begg Sutherland & Co., and a few others, the quality of the rest has been found much inferior to that produced last year. The shocking difference of about a rupee per maund between inferior and good qualities (although both marked as Crystal No. 1) is sufficient proof that more Mills have produced inferior quality. In no part of the world except in India, Sugar inferior in colour and powder like crystals is passed as White Sugar quality, as is done by some of the members of your Association. It seems except a few, none of the Mills have cared to compare their sugars with the Indian Sugar Standards. In spite of ample proofs and facts, if your Association think of marvellous improvement made by themselves then there is nothing to be said about improvement in future. Even to-day in spite of Indian Sugar being cheaper than Java by Annas 8 to Re. 1 per cwt., still in Bombay alone an average of 10,000 bags of Java Sugar is regularly consumed per month. As far as I know none of the members of your Association have cared to visit the ports and big trading centres to look into the qualities produced by the Indian Mills, otherwise the words "Marvellous Improvement" would have never been used by you.

Again, in spite of remote chances for import of Java Sugar in this country, the most important persons connected with the Java Sugar Industry have visited this country and the information they have gathered about the Indian Industry is perhaps more than that gathered by your members. As per instance, during last May when I was in Amsterdam and met the President of "Nivas" (Java), I saw sugar samples of each and every Indian Mills there in his office. If in this way our sugar Mill owners care as much, your misstated words "Marvellous Improvement" would have been a thing of reality. Further, a clause in your Contract Form regarding quality has encouraged more your members to make and deliver any sort of quality they would like. Only they see that the bags are marked as No. 1.

In reply to para. 'C' what you say is contrary to the fact.

Weights.—I have checked the actual weights from the account books of the local merchants and beg to state that except a few, almost in all the Mills, the weights are on an average of $\frac{1}{2}$ lb. less. Sugar is distributed in every corner of our country and it is almost impossible to make complaints for shortage of $\frac{1}{2}$ lb.

Contract Form.—The form sent by you is in no way at all agreeable to the trade. The suggestions made in my letter, dated the 31st January, 1936, and also made by the Cawnpore Sugar Merchants' Association to you will only satisfy and encourage the healthy development of the sugar trade.

Your suggestion of Arbitration by the members of the Indian Merchants' Chamber, Calcutta, does not carry any further than the Tribunal of Arbitration of your Association. The sugar trade centre is now at Cawnpore and not Calcutta and therefore Cawnpore Sugar Merchants are better qualified for Arbitration. Still to satisfy the whole sugar trade of our country and for convenience both the parties may be allowed the freedom to select one of their own. As far as my information goes Mr. R. C. Srivastava never agreed nor supported your Contract Form and his name is wrongly used by you.

Finally, the only proper course in my opinion is that a Joint meeting be held at Cawnpore where the members of your Association, the members of the Cawnpore Sugar Merchants' Association, the members of our Association and also some of the prominent sugar merchants of Karachi and Calcutta and other centres be invited to discuss the Contract Form which may be helpful to the trade and to the Industry."

Letter No. 8, dated the 27th June, 1936, from the Cawnpore Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta.

"With reference to your letter, dated the 11th instant, No. 956, and to my letter of the 23rd instant, I beg to draw the attention of your Committee to letter, dated the 23rd instant, forwarded to you by the President of the Bombay Sugar Merchants' Association, and addressed to your Association, and copy sent to this Association.

The Committee of this Association support the Bombay Sugar Merchants' Association's letter generally, and in view of what the President of the above Association writes, my Committee wishes to be acquainted with the proposals that are presumably being formulated by the Committee of your Association for the convening of a Conference of the Manufacturing and the Trading interests of sugar.

I might state for the information of your Committee that opinion among the Traders is hardening in the matter of legitimate grievances of the Trade, and in mutual interests, it is essential that the Conference is convened at an early date.

I await the considered views of your Committee, and remain, Dear Sir."

Copy of the statement sent by Mr. J. U. Mulji, to be read at the Conference between representatives of Sugar Merchants and the Committee of the Indian Sugar Mills' Association, Calcutta.

The above statement is enclosed separately (pages 627-39).

Letter No. 9, dated the 14th August, 1936, from the Cawnpore Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta.

"I am in receipt of your letter No. 1555 of the 10th instant and of the six copies of the Correction list sent by you. These have been noted but are not necessarily accepted as correct or accurate.

2. The minutes of the proceedings of the Conference held on the 28th and the 29th July last at Calcutta between your Committee and the Sugar Merchants have been considered by my Committee, which has desired me to request you to convey its thanks to your Committee for the kind courtesy they extended to the Representatives of this Association during the Conference.

3. My Committee is of opinion that while the Conference cannot be said to have failed, its results have not been such as would have assured trade opinion, and would have won the willing co-operation and confidence of the merchants all over the country. After having studied the minutes of the Conference very carefully, it feels that so much still remains to be done to satisfy trade opinion that the matter requires fresh and better consideration than has been accorded so far to the matters under reference. It desires that the opportunity of the General Meeting of your Association on the 18th August should be utilised to give all these matters careful consideration in the very interests of the Sugar Industry in India. I give

below the views of my Committee, which, it is requested, be considered at once in order that action may be taken which would satisfy Merchants dealing in Sugar all over the country.

The undernoted references are to the Minutes, dated the 6th August, 1936, of the proceedings of the Conference sent by you.

Page 2, Para. (1).—The tenor of this minute has perverted the sense of it, and I may point out that our delegation objected to all kinds of unnecessary remarks. It was pointed out by them that all sorts of remarks casting doubt on the nature or condition of the goods were to be covered in the representation to the Railways, including remarks like "Contents inherently liable to sweat and moisture" and other similar remarks ostensibly for the safeguarding of the interests of the Railways, but in effect attributing to the goods liability to incur damage which is more imaginary than real. As your Committee will know it from their experience, remarks of such nature disturb the buyers at the Mofussil Markets and the Traders who have bought from the Mills suffer at their hands for wrong remarks by the Railways. It might further be pointed out that remarks of such nature are not given in the Railway Receipts of consignments of several Mills except in wet weather, while in the Railway Receipts of some Mills, these remarks are invariably made at all the seasons of the year.

It will be difficult to make a list of all kinds of remarks given by the Railways, and the Railways should know the remarks given by them on Railway Receipts of Sugar consignments. In addressing them, your Association will base its representation on all remarks given by them as a matter of practice. Should your Committee consider it necessary, this office will be prepared to address the Railways in support of your representation, and I shall be pleased to have a copy of your letter to the Railways in this regard.

Page 4, Contract Term 2.—My Committee feel that as at present proposed, letters testifying to the cause of delay in the despatch of consignment against despatching instructions, are not obligatory to be attached to the Railway Receipts, which is very necessary for safeguarding against possible default in the payment and delivery of the Railway Receipt. It is the experience of all Merchants that when their Railway Receipts are received late by them, their buyers refuse to take delivery of them without the above letter being produced with the Railway Receipt. They have to bear the resulting loss and inconvenience, which is against equity and fairness. It affects the good name and reputation of the Mills' buyers, whose buyers consider them guilty of neglect or intentional delays. It is admittedly in the interests of the Mills to attach such letters to the Railway Receipts, but when this is not done, it becomes difficult to enforce the delivery of the Railway Receipts. The presentation of the letters referred to above must therefore be made compulsory by a Term of the contract or by a bye-law of your Association, such bye-law being clearly stipulated in the Terms of Contract.

Page 4, Contract Term 4.—The rate modified in the Conference is 7½ per cent. per annum, but it must be considered that money is plenty and cheap for genuine commercial purposes, and that therefore its incidence is burdensome. My Committee consider that six per cent. would be a sufficiently high rate of interest for the purpose of exercising a check on defaults in payment when it is due. A high rate of overdue interest defeats this purpose. It encourages the habitual defaulter into desperation, and penalises severely the casual defaulter. It would not be wise to allow this practice, and I hope your Association will agree to the rate of interest on overdue payments being fixed at 6 per cent. per annum.

Page 5, Contract Clause 8.—With reference to the Corrections List item 2, my Committee do not agree that this part of the clause should be retained. Trade opinion feels very keenly that this part of the Clause has given to the Manufacturers a wide margin, which has sometimes been abused. This misuse of the sub-clause is to the disadvantage of the Mills'

buyers. My Committee considers it essential for the safeguarding of Buyers' interests that the clause be deleted.

Page 6, Contract Clause 10—Weight.—In this connection it was agreed in the Conference that your Association would adopt a bye-law that in consignments having uniform short weight, the Mill will afford relief to the buyer. This has not been recorded in the Minutes, and I shall thank you to send to my office your Committee's confirmation of it.

Page 6, Contract Clause 11—Destination.—With regard to the insertion noted in the Corrections List of the 10th August, our Representatives point out that it was not even mentioned in the Conference, and has been inaccurately put in the Corrections List. The insertion therefore should be deleted. It was agreed in connection with this Clause that your Association would adopt a bye-law that arbitrators will decide disputes in accordance with the trade practices and usages prevailing at the destination market. Kindly communicate to me your Committee's confirmation of this.

Page 7, Contract Clause 17.—In this connection, it was agreed that legal opinion would be obtained in the interests of both buyers and sellers. This has not been accurately reported. Kindly favour me with the details of the opinion obtained.

Page 7, Contract Clause 18—Arbitration.—My Committee have studied this very carefully, but find it absolutely unacceptable to commercial opinion. The scheme is expensive and will tend to eliminate petty claims, howsoever reasonable they might be, of the ultimate buyers, who form the backbone of Sugar distribution. It is a cumbrous scheme which will involve such delay as to cause denial of redress of genuine grievances of big and small traders alike. The numerous stages of its working will retard expeditious and just settlement of claims, which is very necessary for establishing confidence in Indian manufacturers, that is, Manufacturers of Sugar in India. Hitherto, shortcomings of Indian Sugar Mills have been overlooked in consideration of the nascent nature of the Industry, which, however, will not continue its infancy for an unknown period. If ultimately confidence is not restored, it will injure them badly. It is not in the interests of the Mills themselves to adopt a system and machinery of arbitration, which is impracticable, cumbrous and expensive, and which will mean denial of justice.

Commercial opinion cannot help feeling that the attitude that the Manufacturers have adopted is one of donor of boons, which is inconsistent with free trading between the buyer and the seller. It feels that the fact has not as yet been recognised that the buyer and the seller have dealings as equals, and not as supplicants and patrons. The present position of the Manufacturers is based on the high level of production accorded to it by the Government. Indian public has made a tremendous sacrifice to support this protection, and will not tolerate a misuse of it by the Manufacturers for their own ends. If the Sugar Manufacturers are not prepared to give good value for the buyer's money, and try to evade the legal consequences of it by the device of an impracticable and cumbrous arbitration machinery, public opinion will harden against the Manufacturers, and it will be difficult to defend the Industry against the agitation for lowering or abolition of the level of protection.

The proposal set forth in the Draft Contract of this Association is very simple and easy. Nor is it expensive, and therefore it will be conducive to the just and expeditious settlement of claims. My Committee is very particular, therefore, that the scheme of arbitration detailed in the Draft Contract, and supported by Traders all over the country be adopted by your Association. This scheme would require of course slight modification, and may be stated again as the modification is vital though slight:

In the event of a dispute arising (etc.), the same will be submitted to the arbitration of two persons connected with the Sugar Trade or Industry, one to be appointed by each party. If the Arbitrators disagree or fail to make an award, they will appoint an Umpire whose decision shall be final and binding. If they fail to agree to the appointment of an Umpire, the Sugar Technologist of the Imperial Council of Agricultural Research will

appoint the Umpire. The decision of the Arbitrators, or the Umpire, as the case may be, shall be final and binding on the buyers.

Your Committee will appreciate that unless Trade opinion is satisfied, there is little prospect of Sugar Industry being able to enjoy the full benefit of the protection it is receiving. Since the Merchants ask only for fair and equitable dealings, your Association can meet their view points easily, and my Committee hopes that proper action would be taken in the General Meeting of your Association to satisfy the Merchants.

With regard to matters reserved for regulation by bye-laws of your Association, and for consultation of legal advisers, I shall be glad to hear from you at an early date what opinion has been given by the lawyers, and that action has been taken by your Committee for the adoption of bye-laws.

Kindly put this letter before your Committee and the Association in the General Meeting in their next meeting."

Letter No. 10, dated the 3rd September, 1937, from the Sugar Merchants' Association, Bombay, to the Cawnpore Sugar Merchants' Association.

"I am sending you for your information the following resolution passed by the Managing Committee of this Association, in its meeting held on the 29th August, 1936:—

RESOLUTION.

When any member of your Association has purchased Sugar from any of the Indian Sugar Mills and a dispute has arisen regarding that dealing and the aforesaid member of our Association has entered into correspondence or asked for an Arbitration without getting proper consideration, then under these circumstances if the member applies to our Association, our Association shall inquire into the complaint and shall require the Mill or the Seller concerned to give due consideration to the complaint within eight days, failing which, it is hereby resolved that no member of our Association shall have any direct or indirect dealings in future with that Mill or Seller."

Letter No. 11, dated the 7th October, 1936, from the Cawnpore Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta.

"I acknowledge your two letters No. 1797 of the 24th ultimo, and No. 1881 of the 5th instant, and note what you write.

The action taken by the Committee of your Association has caused not a little surprise among the Sugar Merchants here. While your letter of the 24th September was still under consideration of the Committee of this Association, your Association considered it advisable to adopt the new Contract, without informing this Association, or any Sugar Merchants at all, that you were taking this step or that it was contemplated by you. I may point out that the Committee of my Association made it clear in their letter of the 14th August that Trade opinion had not been satisfied by the consideration accorded by your Association to its grievances, or by the efforts made to redress its grievances, and that the matter required fresh and better consideration. This Association has not even now been informed of the proceedings of the Annual General Meeting of your Association, and such an important step has been taken without any notice to the trade organisations, whose members have such a vital interest in it. Your Committee expressed a hope in your last letter that the co-operation of the Sugar Merchants would be available to them, but actions like this are not calculated to assure Sugar Merchants or to inspire confidence in them. In the past, I have made the attitude of this Association quite clear, and it still continues to be the policy of my Committee, namely, that there will be friendly co-operation with the Sugar Mills for the improvement of conditions of trade in Indian Sugar and for the promotion of the interests of the Sugar Industry in India. I regret that the step taken by your Association has caused an impression in trade circles that there is no desire among Sugar Manufacturers to reciprocate our co-operation.

Your Committee will appreciate that an incorrect impression or opinion is not in the interests of Mills or the Merchants, and that no effort should be spared to remove the cause of that idea. It is suggested therefore that you will kindly communicate it to your Committee that the new Contract Form must be *withheld* at least for the time being, and that no further action should be taken in this matter, at least for the time being.

Acquainted as we are with the opinion among the Merchants in other markets, it can be possible for us to say that if the Contract is attempted to be brought into use, it will most likely arouse much opposition in other markets, and therefore it will not be advisable for your Association to proceed with the new Contract until you have been able to take at least a better part of commercial opinion with you.

Meanwhile the matter is receiving the attention of my Committee, and I hope to be able to communicate to you the views of my Committee next week. I shall be glad if you will please send me the reply of your Committee to this as early as possible.

With regard to the details in your letter of the 26th ultimo, kindly give your immediate attention to the following items and favour me with your reply by return of post.

In regard to the carriers' letter testifying to the cause of delay in despatch of Sugar consignments, kindly state fully what you mean by "The co-operation of your Association in this matter is also desirable." If you will indicate the lines on which we are to assist your Association in this matter, I shall give it my immediate consideration.

With regard to the Arbitration Clause in your Association's new Contract, kindly make it clear (i) why it has been made necessary for all disputes regarding the quality or condition of the goods to be settled at Calcutta, (ii) whether it is not an implication of the Contract Term in question that the surveyors must belong to Calcutta, (iii) why your Association has considered it essential to add the extraordinary proviso 'Surveyor, Surveyors or Umpire shall be bound by the Terms of Clauses 7, 8, and 11, and (iv) why it has been considered necessary to refer disputes of arbitration to sole Arbitrators only. It has been provided that arbitrations must also be held at Calcutta, but no explanation is given why is so desired, and whether it will not make it necessary that Arbitrators under the clause must belong to Calcutta.

Please supply me information on the above points by return of post so that I might be able to place it before my Committee for its consideration."

Letter No. 12, dated the 13th February, 1937, from the Bombay Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta.

"I am in receipt of your letter of the 8th instant and regret to find that in spite of my having explained to you the whole situation very clearly in previous correspondence, the millowners still do not change their attitude and stick to their point which is as unfair as unacceptable to us. I have therefore to once again request you to agree to all what I have stated in this connection and not to print proviso in the New Contract Form as that will be wholly unacceptable to the merchants.

I hope and trust the millowners will once again reconsider this matter and will not aggravate the situation for such a matter. If in spite of this, they do not show any reasonable attitude and do not agree to delete the proviso as arranged at the meeting, I am afraid the arrangement arrived at will break off and naturally the responsibility will be theirs."

Letter No. 13, dated the 5th February, 1937, from the Bombay Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta.

"After writing you to-day, I received your letter No. 507 regarding the proviso in Clause No. 8.

I must frankly say that we never agreed that the proviso be printed even in italics and because of your spirit of agreeing, we proceeded further and I earnestly request to the members of your Committee not to be adamant now."

Letter No. 14, dated the 22nd February, 1937, from the Bombay Sugar Merchants' Association, to the Indian Sugar Mills' Association, Calcutta.

"Your kind letter of the 19th instant is to hand for which I sincerely thank you. Regarding the proviso, I am sorry we cannot agree to the same under any circumstances. In a country like ours where thousands of sugar dealers are spread over in different parts, it is almost impossible to explain to them for striking off that portion. Most of the merchants do not know English and they simply sign Contracts in good faith but from the past experience it is now essential that nothing disputable should now be kept into the Contract for free business.

For information of your members, let me inform you that our accepting of "fairly similar to the basis of sale" is now in practice proving detrimental to the sugar dealer and for the present I do not wish to open the old sores about the quality.

The action of some of the millowners about delay in Chalans is most unworthy of the manufacturers. We know the difficulty of the wagons but here the instances are such that undue advantage has been taken under the cover short supply of wagons. In falling market they railed their own sugar to ports and also went on selling as ready at a better price for immediate Chalans and delayed Chalans of the previous sales. If you agree to institute an enquiry I will try to prove the same.

Let me make it plain that still the hearts of the Manufacturers are not changed for co-operation. I on behalf of myself and on behalf of sugar merchants of our country most respectfully finally appeal to the members of your Association to give up such unfair attitude to the trade otherwise we shall have to represent the Government, the Legislature and the consuming public at the Budget time although personally I am most unwilling for such step."

(19) Letter, dated the 30th June, 1937, from the All-India Sugar Merchants' Conference, Cawnpore.

With further reference to my letter of date, I am also sending herewith the following further papers:—

- (1) A Statement (in six copies) submitted by Mr. J. U. Mulji to the Conference between the Committee of the Indian Sugar Mills' Association, Calcutta, and Representative of Sugar Merchants. This is referred to in page eight of the correspondence.
- (2) Letter, dated the 3rd May, 1937, addressed by the Cawnpore Sugar Merchants' Association, and dated the 17th April, 1937, addressed by the Sugar Merchants Association, Bombay, to the Director, Imperial Institute of Sugar Technology, Cawnpore. Both the letters are in six copies.

COPIES OF LETTERS ADDRESSED BY THE SUGAR MERCHANTS' ASSOCIATIONS AT CAWNPORE AND BOMBAY, TO THE DIRECTOR, IMPERIAL INSTITUTE OF SUGAR TECHNOLOGY, CAWNPORE.

- (1) *Copy of letter, dated the 17th April, 1937, addressed by the Bombay Sugar Merchants' Association, to the Director, Imperial Institute of Sugar Technology.*

I am directed to acknowledge with thanks the receipt of your letter No. 28/SS, dated the 13th April, 1937, and in reply to state that the Committee of this Association approve of the recommendation made by the Advisory Committee of the Bureau of Sugar Standards to the Indian Sugar Mills' Association to amend the quality clause of the Form of Contract

in the manner suggested in your letter under reference but take an exception to the inclusion of the following proviso, viz.,

That the Seller shall not be responsible for the change that may at any time occur in the appearance, grain, or colour of the goods due to the inherent quality thereof.

which, the Committee is of opinion unanimously that in the light of unpleasant experience gained during the past season 1935-36, is detrimental to trade and against the interests of dealers.

In the meeting between the Representatives of Merchants and Millowners, which was convened by the Indian Sugar Mills' Association on the 21st January last, the matter was fully discussed when satisfactory agreement was reached whereby it was decided to drop this proviso in the interest of trade, and subsequently a copy of the proceedings of the meeting was forwarded to this Association by the Secretary, Indian Sugar Mills' Association for information and guidance, which was forthwith confirmed by us. But two days thereafter a corrected copy of the proceedings was sent to us in which the Mills' Association insisted on the inclusion of the said proviso, and the same being printed in italics with a suggestion that if the Buyers were not agreeable to this proviso, they might request the Mills to delete it at the time of signing Contract. This Association, however, did not agree to this suggestion with the result that the dispute in regard to the exclusion of the said proviso remains still unsettled. It may be noted that both the Cawnpore and Calcutta Sugar Merchants' Associations have endorsed our views in this connection and disapproved of the inclusion of the proviso in question.

In the circumstances as they are, the Committee of this Association have directed me to request you to reconsider the advisability of the exclusion of the said proviso in the interest of the trade, and with a view to ensure smooth working of the proposed Form of Contract.

The Committee of this Association will be thankful to you for taking such steps as may be necessary with a view to arriving at some solution with regard to the exclusion of the said proviso which is of vital importance from the dealers point of view.

Thanking you in anticipation of your favourable reply, etc.

(2) *Copy of letter, dated the 3rd May, 1937, addressed by the Cawnpore Sugar Merchants' Association, Cawnpore, to the Director, Imperial Institute of Sugar Technology, Cawnpore.*

INDIAN SUGAR STANDARD.

I beg to acknowledge your two letters No. 1316-1325 and 29/SS of the 25th March and the 13th ultimo respectively, in regard to The Indian Sugar Standards.

As a result of the efforts of this Association, and the efforts of the other Sugar Merchants Associations as well, the Indian Sugar Standards were brought within the zone of practical use at the Conference which was held on the 28th and the 29th July, 1936, at Calcutta, between the Committee of the Indian Sugar Mills' Association and representatives of the Sugar Merchants of various important Markets in India. The Representatives of the Sugar Traders pressed for the adoption of the Indian Sugar Standards as the basis of sales by the Indian Sugar Mills of their qualities. The Committee of the Mills' Association agreed to this, and the following extract from the Minutes of the proceedings of the Conference referred to above would be of interest to you:

EXTRACT.

DESCRIPTION OF QUALITY.

“Two alternative proposals were considered by the Conference namely, that either the factories should adopt the Indian Sugar Standards, and sell

their sugar on that basis, or on the basis of sealed samples given to the buyer. After some discussion, the Conference agreed on the following alternatives:—

- (a) That factories should try to sell their sugar on Standards fixed by the Bureau of Sugar Standards which the Indian Sugar Mills' Association agreed to try to get modified to suit their adoption by the factories, any thing below No. 20 colour Standard to be sold on sample. Where factories consider that they can sell Sugar on Indian Sugar Standards, they should make provision accordingly in their Contracts.
- (b) If the above is not possible, each factory should at least have its own Standards, which it should be able to fix within a fortnight of its starting. Sealed samples of these Standards should be supplied to the (1) dealers who may have bought the Sugar from the factory and to the (2) Indian Sugar Mills' Association. In this connection, it was agreed that where a factory cannot adopt, or fails to adopt a standard due to variation in the size of the Crystals, such variation should not mean cancellation."

The Conference adopted the above suggestion in the Contract Form discussed by it, and the Indian Sugar Mills' Association incorporated it in their Contract Form issued in September, 1936. A copy of this Contract Form is attached herewith. An original copy is not available, and so a copy of the form attached to the Agenda of the Conference and used therein is attached herewith.

A subsequent Conference was held in January, 1937, between the Committee of the Indian Sugar Mills' Association, and the Contract Committee of the All-India Sugar Merchants' Conference. This Conference did not authorise the Indian Sugar Mills' Association to drop the stipulation regarding the basis of Indian Sugar Standards being used for sales, but the Committee of the Indian Sugar Mills' Association omitted the reference to the Indian Sugar Standards.

You will understand from the above that merchants dealing in Sugar are desirous of utilising the Indian Sugar Standards as they assure their buyers of the quality they purchase, but that the manufacturers of Indian Sugar are not willing to adopt them. The question is, however, of not a little importance, as the future of Indian Sugar depends largely on the extent to which qualities of Indian Sugar are standardised.

The Association would therefore suggest that the Government should take steps to make the Indian Sugar Standards compulsory for all Manufacturers of Indian Sugar. This will quickly make up the shortcomings of the backward Mills, and assure the Trade of fair supply against purchases.

I might further mention that there is a possibility of the Indian Sugar Standards being used mainly in dealings in Sugar Futures when a Terminal Market is established for dealings in Sugar Futures.

In this connection, I have received a copy of the letter dated the 17th instant forwarded by the Bombay Sugar Merchants' Association to you, and would advise you that this Association would generally support all that that Association has written you, and will be pleased to know what action you intend to take to move the Mills' Association to drop the proviso referred to.

I might add that I have not received from the Indian Sugar Mills' Association any reference or enquiry regarding the advisability of incorporating the Indian Sugar Standards in the Contract Form of the Mills' Association, and that no Sugar Mill in India, as far as our information goes, has so far adopted even the defective Contract Form agreed to between the Mills' Association and the All-India Sugar Merchants' Conference Contract Committee, subject to the proviso in Clause 8 being omitted.

I shall be interested to hear from you in this connection, and to receive from you a copy of the Note of Standardisation of Qualities of Indian Sugar issued by you.

Copy of the Statement sent by Mr. J. U. Mulji to be read at the conference between representatives of Sugar Merchants and the Committee of the Indian Sugar Mills' Association, Calcutta.

Mr. President and Friends,

Meeting as we are under the shadow of an unprecedented slump in sugar market, I cannot but welcome this opportunity of congratulating your Association for at least realising the necessity of calling such a Conference. In spite of request and warnings of the Bombay and Cawnpore Associations against the state of affairs prevailing in the sugar trade from time to time, your Association did not care or realised the urgent need of concerted action by all the interests combined upto now because I feel we are meeting together very late. Also we are the sugar merchants even to-day feel that your Association has still not understood the gravity of situation otherwise this conference would have been called at Cawnpore, the actual centre of sugar industry and mutual contact would have carried us a long way towards understanding the actual situation and exploring the ways and means of progress. I would say that the choice of place is not a happy one. This has caused in our minds a suspicion that you are still not earnest for such a Conference. However let us discuss the whole situation earnestly dispassionately and frankly so that by mutual understandings and exchange of views this meeting may result in a happy augury for the future of our industry and trade. Nowhere in any part of the world have I seen industrialists thinking and acting in their own interests regardless to the fact that their own interest is wholly dependent upon a welfare of a class who has come to occupy a place of importance in the present order of society. I am sorry to have to tell a different story in our country. Long experience and years of contact have made me to believe that the millowners think themselves of the upper class than the merchants. But a greater misconception than this cannot exist. It is needless to exaggerate the important part played by the merchant-class towards helping the industry. If the industrialists are considered to be the heart of industry the merchants can be called the veins of the industry. If this is lost sight of by members of your Association as at present under the boom of protection then the future of industry is never going to be stable and in a few years everyone of us will realize that a finest opportunity for the industry is lost. I request for a change of the mentality of your members that protection although granted by the Government, actually comes from the consumers through the co-operation of the merchants. Also the protection is not meant only for the industrialists but for the trading class also.

The present crises grim and great as it is not a sudden outburst of unseen and uncontrollable forces but it seems to me it is a result of accumulated neglect and self-created evils. Self-centred and short-sighted attitude of some of the millowners have exaggerated the evil. Merchants have long since been clamouring for a number of fair facilities but no heed has so long been paid to them. It is really an irony of fate that even though there is no over-production this year, still the crises is serious. The reason is not far to seek. Merchants will always rely on statistics supplied to them but here they were misled. The first forecast in February was announced at 684,000 tons and four months after when most of the factories were closed then the second forecast was at 885,000 tons which was about 30 per cent. more than first one and even after closing of all the mills to-day nobody knows the actual production. The Millowners may blame the Government Technologists for such a forecast and the sugar Technologist may blame the Millowners for not supplying the outturn returns timely but between these two we the merchants are crushed. Either the sugar Technologist or the Millowners would have published every month the production and delivery figures with carry-over at the end of every month which would have helped the merchants to understand the market tendency clearly. In Java, the producers publish a forecast before the commencement of the season and

then during the crushing season every month they published revised estimate and then the final one. The Java Government Statistical Department publishes the Export figures with destinations every month. All these help to form opinion of the market tendency. An Indian merchant can give the correct idea of the statistical position of Java and other sugar producing centres of the world while he is unable to give the figures of his own country. This year's forecast has been the laughing stock of the sugar world. The further difficulties are added by the Millowners in not maintaining qualities of their production which they put on the market in the initial stage of crushing campaign. Merchants entirely depending upon the *bona fides* of the producers enter into forward commitments spreading over several months ahead. With this idea, that every endeavour will be to improve the quality day by day as is always in all the sugar producing countries. This is a factor which is keeping the trade in healthy conditions. Instead, most of the Millowners produced lower and lower qualities. The temptation of huge profits caused to over-crush than the capacity, with the result that the qualities were lowered in most of the Mills. The idea in the minds of the millowners is for more and more production never caring for producing unwanted qualities. They have only cared for quantities. This year more numbers in qualities are added such as Super Fine, Superior, Extra Superior, Special, No. 1B, No. 1C, Local, No. 1½, No. 1½, No. 2, No. 3 and then lots No. 1, 2, 3, 4, 5, 6 and so on and what not? The producers never cared for the contracts they have already entered into after giving certain idea of the quality or their production in the earlier stage of the crushing season. I do not say this is the case with all the Mills. I am speaking of general. I admit that some of the millowners have made earnest efforts to make better qualities and fulfilled the commitments. But these numbers are few. Most of the millowners forced upon the buyers such inferior qualities against the contracts and when the complaints were made such millowners only tried to take shelter under the contract clauses vaguely worded which are all one-sided and unequitable. They thought that they can carry on such methods under the terms of the contract form. And under the vague definition of quality namely fair average quality of the season and also under these all embracing phrases most of the Millowners have taken shelter to make and deliver whatever they like. Let me here point out that the meaning fair average quality is not understood by the millowners. Even under fair average quality they cannot deliver what they are doing now. The word 'Fair Average' means the sugar should be very nearly similar to Grain and Colour. For instance it may not be the mixture of small, medium and big grains and also similarly in colour but I am in position to definitely say that the qualities tendered by some of the millowners under the contract very quite differently from the quality contracted in Grain and Colour both and of a great difference in price. Still, they have insisted and threatened to deliver any sugar under the vague phrases of a contract form. Most of these millowners were never sugar merchants nor sugar industrialists nor have tried upto now to know about the qualities of sugar. They think that they have got one protection from the Government by which they can exploit the situation and make huge profits and the second protection they have got from the quality clause of the contract of the Millowners' Association so that they can make and deliver whatever they like. These millowners have never thought of their duty to the consumers and trade. The only idea is to the Mills during the short time and then they have nothing to be afraid of the future.

The millowners have never tried to understand the difficulties of the merchants. The merchants having entered into the contracts of a particular mill try to push on that quality into the market. If in the beginning the quality is received regular the demand is created for such quality. But as a crushing develops, he begins to get different quality and the demand for such, at once ceases. He complains to the Mill Agents. The Mill Agents report to the owners, promises of enquiry are made but rarely anything done further and in the meantime the delivery period of the contract approaches

and the merchant becomes nervous what to do. The millowners having made knowingly inferior quality know their weakness and agree to extending the delivery period, which has proved a long rope in the neck of the merchants to-day. Here also I must admit that few millowners although being not, at fault in the least about qualities, but having judged the general situation of the market honestly tried to help the merchants by giving more time for delivery. But unfortunately they had also to repent because of the weakness shown by the few individual merchants. For this also let me point out that all this is the result of the system jointly created by the millowners themselves in the sugar trade. The crises have been further aggravated by the inter-competition of the millowners among themselves. Every millowner seems to have entered into a race to sell off whatever he hold neither caring for the plight of the merchants nor their own brothers. They have begun to cut prices daily without caring for the future. Being not satisfied even with such slump into the market, some millowners have gone so far to begin to sell even the production of 1937. This state of things have finally shaken the confidence in the sugar market.

The first business of this meeting should be how to restore the confidence into the market. This can only be done either by fixing the minimum prices of the qualities jointly by the merchants and the millowners themselves. Secondly the merchants be given first opportunity to sell their stock. Thirdly the fair compensation to be allowed to merchants for the lower qualities tendered to them and also all other similar facilities to be given to the merchants. Further the announcement be made to-day that the new crop crushing will be delayed with the 1st of December. If this is done, it is more in the interest of the millowners than in the interest of the merchants. Now I again come to the quality. The qualities to be defined White and Brown clearly and in the contract clause instead of fair average quality of the season should be put White sugar not lower than Indian Sugar Standard No. — in Grain and not lower than Indian Sugar Standard No. — in colour.

Now I come to the delivery clause and for which I refer to the sub-para. 4 in my letter to you of the 31st January, 1936.

Regarding weights, as I have pointed out in my letter to give drop of scale as in Java. In every bag, Java gives a drop of scale of 80 grammes. This drop of scale is meant for meeting the invisible loss of sugar in transit.

Samples.—One pound sample to be supplied to the buyer at the time of contract per each thousand bags and in case of forward contract of a larger quantity a fresh sample of a pound be supplied every week during the crushing season. There are many instances where inspite of repeated requests by the buyers no samples are supplied not even that some of the millowners have declined to their buyers saying that there is no clause into the contracts that the samples be given. These millowners forget the custom of the market and also their moral binding.

Packing.—Packing to be given in a new Twill Gunny bag of 44"×26½" weighing 2½ lbs. and the contents to be 2 mds. and 28 srs. Uniform packing of all the Mills is necessary, either 2½ mds. or 2-28½ be stopped.

Arbitration.—Although there is a clause of arbitration in the present contract form, the method adopted thereunder for arbitrating the dispute is faulty one. It is used as a means of delaying the matters more, then deciding and settling the things forthwith and unless the millowners treat the arbitration clause seriously and agree to same definite methods as is done in Java and other sugar producing countries, merchants cannot feel themselves fully protected against the dilatory tactics which are at present being adopted by some of the Mills and their Agents.

The essence of the arbitration in Java is that when it is proved in the arbitration that a quantity tendered against sales is found to be anything below the contract quality or the quality agreed upon

then the seller should immediately refund the value of the goods to the buyer and take charge of the goods wherever they may be and if the goods be in the buyer's godown the seller should even pay the buyer godown rent, insurance, etc., and the goods in the meantime remain at the risk of the seller and this lot can no longer be tendered against any sales under the standard contract as it is considered a rejected lot. The Arbitration in Java is decided within two or three hours from the time it is invoked and the result is made available in so short a time.

On account of this strictness in that country, the millowners are strictly adhering to the standard of the quality and do not take risk in tendering a quality having the slightest difference in respect of inferiority.

I know the conditions of trade in Java and in this country are not alike but unless some hard and fast rules are revised for arbitration suiting to the conditions in this country the things will not go smoothly and therefore what I suggested in my letter of 31st January, 1936, is the proper course.

My Association has always cared for the inherent strength of the Industry. We are always eager to co-operate with the millowners for building up a strong huge edifice of our Industry on the rock of inner strength and efficiency.

I want you to approach in this spirit. I want you to think and consider not your or our individual interests. But the interest of the Industry as a whole for your and our prosperity depends upon the future of the whole Industry. The present crises though serious is not such which cannot be overcome. If we pull together, I believe, we can easily tide over the stage.

Whatever I have said or narrated I have done so with a great desire that our premier Industry be strengthened and the sacrifices of the consumers be well repaid. Also at the time of open competition we all stand together as one.

Now I request you and all to excuse me if anybody present here think that I have injured his feeling although unintentionally. Whatever I have said, I have done so generally and nothing against any individual.

I believe that if we improve the Contract Form and standardise the quality, sugar Terminal Markets can easily be created in all important trading centres and on account of difficulties as stated above, second hand forward business in sugar has become very small and the first hand buyers have to carry the whole risk, which is always unadvisable in case of merchants and millowners both. Therefore all these disabilities be stopped from to-day.

I appeal in the end to your Goodness and request you all to ponder and try to meet our demands which my Association placed before the millowners from time to time.

Before closing I sincerely thank you all for giving me patient hearing.

(20) *Letter, dated the 12th July, 1937, from the United Provinces Chamber of Commerce, Cawnpore.*

With reference to the press communique, dated the April 5, 1937, intimating the appointment of the Tariff Board to hold an enquiry to ascertain if the protection afforded to the Sugar Industry by the duties imposed under section 2 of the Sugar Industry Protection Act, 1932, should be continued to the same extent or to a greater or lesser extent during the period from 31st March, 1938 to 31st March, 1946, and the general questionnaire issued on May 12, 1937 and correspondence ending with this Office letter No. C. T. / 11,786, dated the 23rd June, 1937, I am directed by the Committee of the United Provinces Chamber of Commerce to send hereby their opinion as below:

The views embodied in this Memorandum are based on the opinions of the Sugar Mills, firms and persons interested in Sugar trade and cane cultivation and who are members of this Chamber. The Committee do not

propose to answer all questions, as all of them are not appropriate for the Chamber to answer. Most of the interested members of this Chamber have already submitted their replies to the Questionnaire directly to the Tariff Board. The Tariff Board also possesses detailed statistical information regarding all factories. Consequently, the Committee consider that a summary of the statistical position of a few Mills would serve no useful purpose, in so far as the enquiry by the Tariff Board is concerned. The observations of the Committee are, therefore, confined only to such questions in the Questionnaire as are of general importance to the sugar manufacturers and the sugar trade. With these observations, the Committee beg to express their views, as follows:—

PRODUCTION OF SUGAR.

8. Almost complete structural work such as staging and platforms as well as trusses for roofing can be fabricated in India. Tanks of all types, including crystalizers, seed tanks, melting tanks and eliminators are also made. Filter-presses, sulphur furnaces, sugar driers are also obtainable. Cast Iron work of all description as well as cast steel castings are also made. Generally speaking, all main parts of the machinery have still to be imported from foreign countries.

9. (a) The consensus of opinion amongst the factory-owner members regarding the technical assistance given by the Imperial Institute of Sugar Technology is that the Institute has not so far proved of much use to the Industry. It has been collecting figures and statistics and training students for positions in sugar factories. The suggestion is that there should be much more direct contact between Sugar factories and the Imperial Institute of Sugar Technology and practical advice and assistance of the consulting staff should be available to the sugar factories in their day to day problems. Only companies controlling a group of factories can afford to maintain special technical organisation which can investigate problems arising in any of the Company's factories. But a Company with only one factory cannot afford to maintain highly paid technical staff for this purpose. As a rule, technical staff attached to a factory is neither competent enough, nor has time or resources, to investigate and carry research into the special problems connected with the industry. The other suggestions to increase the utility of the Imperial Institute of Sugar Technology to the Industry are as follows:—

(1) Services of the Technical Staff of the Institute be made available to factories free of cost or at a cost not exceeding the actual travelling expenses of the staff concerned.

(2) That the Institute should publish accurate fortnightly statistical reports relating to the Sugar Industry and trade and specially of production, delivery and stocks. The publications of the Institute should not be delayed much longer than is absolutely necessary after the close of the period to which they relate.

(3) The Institute should pay attention towards the translation of the various standard books in Dutch or other foreign languages, embodying the results of years of research and experiments carried on in Java and in other Sugar producing countries and make such works available in English for the use of the factories in India.

9. (ii) The Industries Department of the Government of the United Provinces has proved of considerable assistance to the Sugar Industry. It has held a number of Conferences to discuss the problems connected with the Industry and trade and has been instrumental in fixing the price of cane and attracting the attention of the Government and public to various other problems of the trade and industry, which has proved of considerable benefit to all concerned. The Department can, however, further assist the Sugar Industry by taking in right earnest the question of freight rates and problems connected with various Railways.

22. (a) There is general agreement with the conclusion arrived at by the previous Tariff Board with regard to the acquisition or lossing of land for cultivation of cane by factories.

(b) The constituent members are in favour of allotting special areas to different factories as also that of zoning. At the same time, doubts have been expressed if it would be possible to create zones where factories are situated very close to each other or where supplies to factories come from very long distances. In order that the Zoning System may work properly in any one area it has been suggested that a thorough survey of the area be made and zones be allotted in accordance with the advice of a Committee composed of the Representatives of the Mills, the cultivators and the Government, in that particular area.

The factories are prepared to give assistance to the cultivators in all possible ways to ensure supplies of fresh cane of improved varieties, provided that the money advanced is secure and it is made penal for the growers concerned in that zone to sell their cane to anybody else. The Mills have also suggested that the money advanced for cane may be recoverable through a summary process and long proceedings in Courts of Law may not be necessary.

23. In their opinion the responsibility for constructing feeder roads should be laid on the Local Bodies and not on the Mills.

24. The constituent members are generally in favour of fixing a quota for sugar manufacture by factories, as also for licensing of new factories and extensions to existing factories. It has been suggested that unless the construction of new factories is stopped, quotas cannot work.

33. Freights are calculated according to the capacity of the wagons based on the mileage rate. There has been no change in rates in recent years except for the year 1936-37, when freights were reduced towards the end of April by 25 per cent. from stations situated at a distance of more than 50 miles from the factory. The factories generally favour per maund rate to flat rate.

34. Factories would welcome a reduction of freight on raw materials which are used in the manufacture of sugar, *viz.*, coal, fire-wood, lime manure, sulphur, etc. If freights on these commodities are reduced, the Industry would benefit.

48. At present the minimum price for sugarcane is fixed by the Government on the basis of the prices ruling for Sugar in the market. The formula results in a vicious circle. A fall in the price of Sugar leads to a fall in the price of cane. This in its turn leads to a fall in the prices of Sugar and so the process goes on. This fortnightly revision of the Sugarcane prices creates uncertainty both in the minds of the ryot and of the factory-owners, whose stock of sugar produced from cane bought at a higher rate deteriorates when the prices of sugarcane are subsequently lowered. Secondly, the formula does not take into account the sucrose contents of cane and all cane has to be paid for on the same basis. But it is admitted that to fix prices on this basis would be very difficult in practice. Thirdly, the same price applies at all purchasing centres of a factory. The transport cost from outstations has to be paid by the factory. Fourthly, the price of cane is fixed on the selling price of sugar which also includes the Excise Duty.

In order to fix an equitable basis for the price of sugarcane various suggestions have been made. The first is that the price of cane once fixed at the commencement of a crushing season should be maintained for the whole of the season. The Committee of the Chamber consider that this proposal will not be found workable with the increase and fall in the rates of sugar during the earlier and later stages of the cane-crushing season. The second suggestion is that the prices of cane be disconnected from prices of sugar and the same may be based on the cost of production of cane as ascertained by the Tariff Board in its present enquiry. The Committee think that this will be the most equitable proposition. The third suggestion is that the prices of cane in the neighbouring provinces of United Provinces

and Bihar should be fixed at uniform basis. The Committee very strongly commend these proposals to the attention of the Tariff Board.

60. Molasses is sold by sugar factories locally and to a limited extent to the Molasses Marketing Company, Calcutta. Molasses is transported by rail in molasses tank wagons to Sonapur, Semariaghat and Barauni Junction. The freight from factories to the destination station differs in each individual case. Railway facilities are not considered adequate as most of the tank wagons are reserved for the Indian Molasses Company.

61. The unanimous opinion of the factory-owners is that they are disposing off their molasses at present for no return. In their opinion, the solution of the molasses problem lies in the utilisation of that product for the production of power Alcohol. The production of power Alcohol should present no technical difficulties. The industry for producing power Alcohol has been brought to a successful conclusion in many countries. There are a large number of successful and efficient distilleries working in India also, but none of them except the Mysore Distillery produces power Alcohol. It is, therefore, considered that with a few alterations in the equipment of these distilleries, they can produce power Alcohol also, and it will not be necessary for the Government to instal any experimental distillery for the production of power Alcohol.

Power Alcohol is produced in many countries. In Germany, "Monopolin" is a mixture containing 20 per cent. absolute Alcohol. Similarly in Sweden, Australia, and South Africa, power Alcohol is being produced and mixed with Petrol in various proportions. It is stated that the consumption of power Alcohol in all these countries is increasing from year to year and thereby proving beyond doubt that mixture of absolute Alcohol and petrol can be used with advantage in internal combustion engines.

With regard to India, there might possibly be some suspicion that power Alcohol produced from molasses may reduce the consumption of petrol in the country. But since the consumption of petrol in the country is increasing from year to year, the mixing of a proportion of power Alcohol with petrol should not, in the aggregate, reduce the consumption of petrol. The utilisation of molasses for this purpose would be a very great advantage to the Sugar Industry and would thereby benefit all concerned. The Government would also not lose revenue as the petrol produced from molasses may be taxed at the same rate as petrol is being taxed at present.

The Committee of the Chamber strongly hope that Tariff Board would pay special attention to the utilisation of this most valuable waste product of the Sugar Industry, in the way of producing power Alcohol, manure for fields, fodder for cattle and as a material for building roads. The intervention of the Central Government can, without much difficulty, bring about a working agreement with the petrol combines in the country.

69. During the rainy season Sugar is damaged in transit on account of leakages in sugar wagons, due to atmospheric conditions and transportation of goods at junction stations. The percentage of damaged sugar is estimated approximately at one per cent.

70. It is a very strong complaint of the sugar factories that they do not get wagons according to their requirements and many times cane cannot be transported to factories in proper time. In other cases, delays occur in the delivery of sugar for want of wagons, resulting in huge losses to the factories. The Railways have not been paying sufficient attention to this most important problem.

71. It has been suggested that if special liaison officers could be appointed by the Railways to look into the problem of wagon supply, the hardship of the factories could be minimised to a great extent.

It has also been pointed out that special types of wagons be provided for the transport of sugar. These wagons should be leakage-proof and should have proper protection against atmospheric influence. A major part of the damage to sugar bags is caused on the stations where transhipment is made,

Consequently, if the Railways paid particular attention at the transhipment stations, there will be no occasion for the sugar to be damaged. At a time, when the sugar prices are not very high, it is still more necessary that the quality of sugar should not deteriorate in course of transit. The Committee hope that the Tariff Board would strongly recommend to the Railways to pay special attention to these problems.

85. The present sugar contract form is generally considered suitable. But Clause 8 in Contract Form No. 1 about the deterioration in the quality of sugar is objected to by the dealers. The factories are insistent on retaining that clause. They find it very difficult to do away with that clause, as they do not want to make themselves responsible for the deterioration in the quality of sugar which might be due to the change in the atmospheric conditions or in course of transit. Except this clause, there is nothing in the contract form which is not acceptable to all parties.

93. The idea of a marketing survey is supported by all constituent members. According to the report of the 5th Sugar Conference held at Naini Tal, the question of the survey of sugar marketing has already been taken up by the Imperial Council of Agricultural Research. The Committee is entirely in favour of the idea.

94. The proposal for setting up an All-India Organisation for the selling of sugar has also got the unanimous support of all the constituent members of the Chamber. It has been suggested, however, that in order to make it a successful organisation, it should be representative of all interests, i.e., the cultivators, manufacturers and dealers. Without representation being granted to all parties, it is considered that the organisation may not work successfully. It has been suggested by some that an organisation on the lines of "Nivas" of Java may be established in India also.

98. The Committee are of the opinion that the establishment of a "Futures" or a "Terminal Market" with branches at important sugar trade centres would prove useful to the Sugar Industry, specially in its present condition. A "Futures" Market would assist the industry by regularising the delivery of sugar.

99. According to the views of the 5th United Provinces Sugar Conference, the consumption of Sugar has never been properly estimated and the cry of over-production is based on no sound ground. The Committee of the Chamber are, consequently, not in a position to state definitely as to the amount of sugar which is being consumed in India. There is no doubt that there is still room for an increase in the amount of consumption, if proper steps are taken towards that end.

One of the important suggestions for increasing the consumption of sugar in India is to increase the purchasing power of the masses, which is very low at present. That would automatically give an impetus to the consumption of sugar in the country. The *per capita* consumption of sugar in the country is extremely low and given additional income, there is sufficient room for improvement. With that and in view, it would be advisable to form an organisation on the lines of Tea or Coffee Cess Committee. It may be noted that so far as the upper classes are concerned, the demand for sugar is inelastic. It would increase if the income of the lower classes increases. The Committee do not think that there is any prejudice against white sugar, so as to affect consumption to any considerable extent.

104. The figures regarding the export of sugar from India can be had from the statistical publications of the Government of India and the Committee do not propose to repeat them. In the opinion of the Committee, the export of sugar is possible to the United Kingdom, if Indian sugar receives the preferential rates of duties which are granted to other Empire countries in that market. Indian Sugar can also be exported to Afghanistan, Kashmir, Nepal, Ceylon, Singapur and Baghdad. There are special problems connected with exports to each country, and it is desirable that Government of India paid particular attention to them. Without the export of sugar out of

India, it will not be possible for the industry to carry on in the present level of prices. Consequently, the Committee very strongly suggest the necessity for examining in all bearings the question of export of sugar to foreign countries.

105. The imposition of excise duty on sugar in 1934 came at a very early stage in the life of the industry and was quite unexpected. The Industry found itself unable to adjust itself to the changed condition, specially in view of the increasing number of factories and the dearth of technical men of requisite knowledge and experience to cope with the important problems arising in the Industry. Such conditions did not prove conducive to efficiency and consequently, the factories could not take full advantage of the high level of protection granted to them.

The additional excise duty imposed in 1937 was most ill-conceived and untimely. The condition of the industry did not justify it at all. The increase came at a time when the sugar market was very low and the incidence of the additional levy could not be passed on to the consumer. The factories and the dealers amongst themselves had to bear the additional levy.

109. The aims with which protection was granted to the industry in April, 1932, were two-fold:—(1) to provide for the fostering, developing and stabilisation of the sugar industry with a view to render the country self-supporting in her sugar requirements in due course: (2) and to relieve rural distress by enabling the agriculturists to have a crop that will be readily marketable.

During the first six years of protection, the industry has made giant strides and developed immensely. The number of factories has risen from 22 to 156 involving an investment of Rs. 30 crores. It gives employment to over 2,000 science graduates, 10,000 persons belonging to the middle-class and about 2 lakh skilled and unskilled labourers, in addition to 2 million cultivators of cane. The annual production has reached the high figure of 12 lakh tons as compared to 5 lakh tons at the beginning of the protection period. The Industry ranks only second to Cotton Mill Industry in the country and has secured for itself the first place in the sugar-producing countries of the world, producing 18.95 per cent. of the entire sugar produced in the world.

The production of sugar has outstripped the country's existing requirements and indeed there is considered to be an overproduction. Given further facilities for profitable marketing, the industry is capable of producing still larger quantity of sugar and there is dearth neither of capital, labour or skill to cope with the increased demand, if there be any. It is unfortunate at such an earlier stage in the life of an industry, profitable and full of potentialities to the cultivators, manufacturers, merchants, consumers and the Government alike, the problem should have been to consider measures for restricting the production.

The Committee are not in favour of restricting production, as they think that even in the country itself, there is enough scope for increasing the consumption, in addition to whatever markets may be secured in foreign countries. The same view is held by the sugar producers, in general, as expressed at the Naini Tal Conference called by the United Provinces Government sometime ago. The Committee, therefore, desire very strongly to suggest the necessity for finding out ways and means which would secure additional markets for Indian Sugar in and out of the country. The Committee have no doubt whatever that given adequate opportunities, India can become the biggest sugar exporting country in the world. If the Tariff Board could suggest a way out of the difficulty, the country would be immensely benefited. Thus so far the first aim with which the protection was granted to the Industry has been achieved. But owing to certain inherent weaknesses, the industry is not yet in a position to stand on its own legs, without the assistance of a high protective duty. Therefore, it

will not be desirable at this stage to lower the basis of protection, as the industry cannot withstand foreign competition without it.

On the other hand, the Committee consider it necessary, as discussed below to increase the level of import duty to a higher figure in order to check entirely any import of foreign sugar into the country.

The problem of suggesting a measure of protection that would prove adequate is a very difficult one. The Tariff Board of 1932 estimated the amount of protection required by the industry on the basis of the approximate level to which Java, which has been the main source of India's supply, might be prepared to reduce prices in the event of renewed international competition, or adoption of a price-cutting policy directed against India's manufactures. The said Tariff Board based its proposals on a landed price of Rs. 4 per maund at Calcutta. It suggested a duty amounting to Rs. 6-4 per maund with a deferred duty of Re. 1 per maund for the first seven years of protection. At the end of the protection period, it estimated the selling price of sugar at Rs. 7-12-6 per maund.

This Tariff Board should, in addition to taking the factors taken by the last Sugar Tariff Board into consideration, take stock of additional factors which were not envisaged by the last Tariff Board in fixing the measure of protection and which have been instrumental in reducing the effective protection envisaged by the said Tariff Board for the industry. Such additional amount should be added to the present duty to make it an effective protective duty, against import of sugar into the country.

The following are the remaining items which might be taken into consideration by the Tariff Board to fix an additional amount of duty on the duty in vogue at the moment:—

	Rs. A. P.
(1) The difference in the reasonable price recommended by the 1932 Tariff Board at the end of the protection period and the prices actually obtained at present per cwt.	2 0 0
(2) Being the amount of excise duty imposed by the Government and not anticipated by the last Tariff Board	1 7 9
(3) Being Railway freight from factory to the most distant port town	1 2 0
(4) Being the difference in c.i.f. prices of Java Sugar taken by the Tariff Board as the basis of its proposals and the export prices ruling in the market	1 4 0
TOTAL	5 13 9

Thus the rate of import duty to be imposed by the Government on imported sugar should be roughly Rs. 15 per cwt. The Committee are of the opinion that if a duty amounting to Rs. 15 per cwt. is imposed, the import of Java Sugar, which during the year, 1935-36 had been in the neighbourhood of 2 lakh tons, will be immediately checked. That would give a very welcome relief to the Indian industry. Yet, the Committee are of the opinion that the grant of this additional protection would not solve the problem of the Indian Sugar Industry. The shutting out of imports alone will not be enough. Indian Sugar Industry needs additional markets. The Committee has already suggested where these markets can be found in reply to the questions above.

The grant of protection to the Sugar Industry has also been instrumental in relieving rural distress by enabling the agriculturists to have a crop which is readily marketable. There are, however, several problems connected with the agricultural side of this industry, which yet remain unsolved,

and regarding which the Committee suggest means in reply to other questions elsewhere.

110. In addition to the protective duty of Rs. 15 per cwt., suggested above, the Committee of the Chamber are of the opinion that *inter alia* the following form of assistance are necessary for fostering and developing the Sugar Industry in the country:—

(1) *Agriculture.*

(a) The introduction of higher yielding quality of cane with a view to produce cane with high sucrose content and to reduce any chance of disease and pest.

(b) The acquisition of land for factories for cultivation of sugarcane so as to enable them to improve the quality of cane.

(c) The improvement of transport facilities near about Sugar factories, so as to facilitate the transport of cane and finished material.

(d) The formation of zones for the supply of cane to different factories in the same area.

(e) Demonstration of improved methods of farming on the fields.

(2) *Manufacture.*

(a) Research for the utilisation of bye-products, e.g., molasses, bagasses, etc.

(b) Fixing of standards for sugar.

(c) Prohibition of erection of additional factories in the country and increase in their present productive capacity.

(d) Licencing of factories.

(3) *Research and Technical Assistance.*

(a) Technical experts should visit factories and give general advice to the factory-owners regarding technical matters from time to time.

(b) Continuous research and other matters connected with the industry.

(4) *Marketing.*

(a) Formation of a Central Sugar Selling Organisation, representative of all interests, i.e., manufactures, distributors and cultivators.

(b) Provision of facilities for export of Indian sugar to the various markets suggested in the Memorandum by arranging for lower duties in the United Kingdom and other Empire countries and to Kashmir, Afghanistan, Nepal, Ceylon, Baghdad and Singapore.

(d) Reduction of Railway-freight on raw-materials consumed in the industry, and generally to improve and increase railway facilities for the carriage of cane and sugar.

(5) *General.*

(a) The dissemination of correct information regarding the production, stocks and markets, soon after the close of a period.

(b) The reduction in the Excise Duty by at least 50 per cent.

The Committee has suggested most important forms in which Sugar Industry could be assisted by the Government, in addition to the protective duty.

In conclusion, the Committee desire once again to emphasise that the immediate need of the Sugar Industry is additional markets and increased consumption inside the country. If these are secured, the industry has got a very bright future.

The aforesaid views of the Committee will be further expanded by members of the delegation appearing before the Tariff Board.

(21) *Letter, dated the 12th July 1937, from Agra Province Zamindars' Association, Allahabad.*

As desired by the Secretary, United Provinces Government (Industries Department) in his letter, dated the Nainital, June 4th/5th 1937, I have the honour to enclose herewith six copies containing the views of this Association on the General Questionnaire. I may inform you in this connection that the views of the Association are submitted late as our members are scattered throughout the Province of Agra and the replies from them could not be received earlier. I have already informed the United Provinces Government on the subject.

Enclosure.

Replies on behalf of the Agra Province Zemindars' Association, Allahabad.

PRODUCTION OF SUGAR.

7. (a) The main factors in our opinion which determine the size of an economic plant in the Sugar industry in India at the present time are the following:—

- (1) Rate of Excise duty.
- (2) Price of cane.
- (3) Price of sugar.
- (4) Recovery percentage of Sugar.
- (5) Duration of the crushing season.

(b) This is a very difficult question as factors which determine the size of the smallest economic plant are so variable from time to time and are subject to such sudden changes that it becomes very difficult to fix these factors in order to enable us to determine the size of an economic plant. Looking to the size of factories that now exist in India, we should say that the average size of a factory that should be taken as the smallest unit in India during the remaining period of protection should be a factory with a daily crushing capacity of 500 to 600 tons of cane per day. But the present prices of sugar have sunk to such a low level and if they stick to it or go below it is impossible for a factory of this size or even a much bigger one to exist.

8. Machinery manufacturers manufacture the following sugar machinery in India:—

Crystallisers, Centrifugal machines, Dryers, Sugar Sifters, Sulphur ovens cast iron pipes, Shells of Rollers, Trash Turner plates, Mill bearings, and also some kinds of pumps.

9. (i) The Imperial Institute of Sugar Technology as a matter of fact, has come into existence only for the last year. They are turning out students who are useful assistant Chemists, Bench Chemists and as supervisors but the institute has not yet been able to provide higher technical staff. Although weekly and fortnightly reports are submitted to the Imperial Institute of Sugar Technology but the factories are not benefited with the technical criticism of these reports. In our opinion some means should be devised by which more close and practical contact should be established between the Institute and the factories. It should be in our opinion investigated if one or two officers are attached to the Imperial Institute who should inspect the factories at least twice during the Season so that the technical working of the factory should be brought to a uniform high standard. It will save much unnecessary loss which a large number of factories suffer on account of bad technical control. In our opinion as the Government earns 3 crores and 75 thousands of rupees, of excise it should be their duty to provide sufficient technical supervisory staff for this purpose. If this method is adopted, it will increase General percentage recovery of the whole country and thus increase the income of the Government. It

will also bring down the cost of production and also check a number of Chemists and Engineers from committing frauds on the factory owners who are still inexperienced.

(ii) The Industries department of our Local Government does not give any help whatsoever and in our opinion it is not capable of giving any assistance to the factories.

15. In the Western part of the Province cane is greatly liable to damage from frost disease and insect pest because in West United Provinces the monsoon is the main determining factor for the incidence of damage from frost disease and insect pest. The well-distributed rainfall with a few falls in September and October will remove disease and insect pest. Similarly a rain about X-mas or early January may considerably reduce the chance of a frost. It is very difficult to estimate the actual percentage of loss from these causes but sometimes as in 1934-35 the combined effect from all these causes may be as high as 90 per cent. In ordinary years the loss from disease can safely be estimated at 10 to 20 per cent.

21. The main difficulty of the cane-grower in the cultivation of cane is his poverty and uneconomic size of his holding. On account of his poverty he is not able to invest sufficient money in the cultivation of cane. It requires great manurial food and care and attention. The cultivator does not provide sufficient seed and then sufficient manure to his crop and cannot carry on efficient inter-culture and also has to experience some difficulty in getting regular supply of water. All these deficiencies have the combined effect of considerably reducing the yield per acre of sugarcane for the grower and also effects the quality of cane. On account of the small size of his holding he cannot have proper rotation of crops and this does effect the yield of sugarcane which exhaust the soil.

The main difficulty of delivering cane at the factory is the bad and awful condition of roads as well as the condition of the bullocks which a grower possesses.

In our opinion some of the difficulties can be overcome by a closer contact between the factories and the cane-growers. If the factories render assistance to the cane-growers of their areas by supplying them sufficient and good seed as well as finance them for securing good manure and cheap inter-culture implements, the yield per acre for the grower will considerably increase and it will in turn bring down the cost of the cane for the factory. The commercial morality however of our cane cultivators being not very high, the factories fight shy in investing capital on this account in the fear that many of the cultivators will not repay these loans. Therefore in order to create confidence in the minds of the factory-owners, in my opinion, such advances on being intimated by the factories should be recovered as arrears of land revenue by the Collector. It will solve the greatest obstacles in the way of cane development.

22. (A). The difficulties envisaged by the Tariff Board on the question of the compulsory acquisition or leasing of land for cultivation of cane by factories still exists with the same force as in 1930. So far as the factories in United Provinces are concerned we can see from our experience that there will be a very great agitation if any land round about factories is acquired by compulsion on a large scale. It will disturb the whole economic structure of the agricultural community round about the factories. Therefore, in our opinion acquisition by force on a large scale is out of the question. We, however are of opinion that every factory should have a small farm of 100 or 200 acres for breeding good varieties of cane for purposes of seed. This small farm can also enable the factories to utilise their effluent or dirty water by irrigating the land, and thus removing a nuisance which is often complained off. It will not create undue agitation if a small area say 100 to 200 acres is acquired even by compulsion.

(B). We are in favour of allotting special areas to different factories for their supply of sugarcane or in other words Zone should be allocated to

different factories. As a matter of fact it is becoming too late to introduce zones because factories have now been established without any regard being had to areas for supply of sugarcane. The absence of zoning has resulted in mal-distribution of factories with the result that there are too many factories in certain areas while there are none in others. Natural advantages and disadvantages of cane supply have to a certain extent led to natural zoning.

The United Provinces Government introduced a rule under the Sugarcane Rules Act last year that no factory could purchase within 5 miles of another factory through a purchasing agent. The idea was that within 5 miles of a factory no purchasing agent should act. This year it is proposed that within 5 miles of a factory or an area that may be fixed at the proposed conference at Nainital, no factory either through an agent or through its own employees should purchase cane. This will bring the system of zoning into force. The simplest way of working a zone can be by an adjustment of the Sugarcane Rules just as it is proposed in the United Provinces.

The natural advantage of zones will be that the factory concerned will feel more interested in developing the area allotted to it because it will be sure that the fruits of its efforts will come back to the factory and not taken away by others. They will feel inclined to advance money, seed and manure to the cultivators belonging to the zone.

When a zone has been established the factory concerned will naturally be required to fulfil its requirements first from the zone and go outside the zone. Great difficulty will arise if by chance the growers of a zone make a combination and try to demand a price which is uneconomical for the factory to pay. The factory of course will keep liberty of action in such cases. We think zone should be based on an estimate to supply at least 80 per cent. of requirements of the factory and some steps should be devised by which at least this quantity of cane is ensured to the factory from the zone. In order to make certain rights and liabilities obligating on the factory-owner and the grower, in our opinion some legislative enactment will be needed.

24. (A) This is a very wide question on which it is difficult to express a definite opinion specially when there is no reliable information or figures available about the annual consumption of white sugar in this country. There is also no data which may enable us to find out the tendency of consumption of white sugar, i.e., whether it is on the rise and if so at what speed. All figures that are available at present are based more or less on conjecture. According to the figures that are available it is said that India has begun to produce all sugar that is demanded in this country. In my opinion the lower price of sugar has led to an increased consumption and the country can easily absorb 12½ lakh tons of sugar. As soon as this quantity is produced and we expect it to be done in 1938-39, in my opinion the question of fixing quota for sugar manufacture by factories will have to be taken up.

(B) The Tariff Board of 1930 was opposed to licencing of factories on the ground of eliminating competition in the purchase of cane and relying on the good sense of capitalists that they will not put up factories when existing factories were working. In our opinion these considerations do not hold good now, as the country has reached a stage when it is producing almost all its requirements of sugar and the supply of sugar not having adjusted with its demand has led to a serious depression in the sugar prices and therefore unless control is exercised in setting up new factories and extensions of existing factories the result will be further depression which is sure to result in closing down of a number of factories and thus entail hardship to the cane-grower and the small investor. The tendency is that factories are being erected in Provinces which were hitherto backward or in native states where they obtain various kinds of concessions. Therefore the authority for licencing the factories should be an all-India body because it is not in the interest of the country to drive out the industry from one

province to the other or from Province to an Indian State and thus cause hardship to one Province with little or no advantage to the other.

26. Major portion of our cane supply is transported by carts and very little by lorries. We would like more lorries to be used but the only pucca roads cannot be used because of a damaged bridge.

The average weight of cane carried per cart is 20 Mds. In the present circumstances no improvement is likely to be made by the substitution of rubber-tired carts because the main difficulty in the case of rubber-tired carts is that the village tracks are not suitable for them. The other difficulty is of finance.

36. A tramway is very advantageous because it opens up the interior and brings the cane quickly and directly to the factory without any interference of ordinary traffic as on the railway with the result that the cane comes as fresh as the cart cane. The main difficulty in laying out a tramway is acquisition of land and of finances.

In our opinion the Government should undertake the construction of tramways for individual factories if the factories guarantee to pay the interest on the capital invested by the Government at the rate on which they borrow money from the Government of India. The Government will thus be secured of their interest and they will confer advantages both on the growers and factories without any burden on the public purse.

48. The basis on which minimum prices are fixed under the Sugarcane Act 15 of 1934 is more or less the result of the largest measure of common agreement among the representatives of manufacturers, growers, and the Government. In the absence of any reliable figures of the cost of production of cane and in the absence of any fixed policy of the Government so far as excise on sugar is concerned, there could not be and there cannot be any other basis but the present one, for the fixation of the minimum price of cane. It is very useful. In our opinion, both for the grower and the industry if relation is maintained between the price of cane and price of sugar as both the parties lose or gain simultaneously. In my opinion in calculating the price of cane the excise duty should be treated as an item of expenditure and should be deducted from the price of sugar before taking it as the basis, i.e., the price of sugar *minus* excise should be the basis for calculating price of cane.

49. It is in the interest of factories to pay bonus over and above the minimum rates for superior, early and late varieties but it is difficult for our tenants backward and uneducated as they are to take to such a system. There is going to be another difficulty and that is that the size of an average holding is very small and it may be difficult for a grower to distribute his small area between 2 or 3 varieties of cane because if he will have small area under different varieties it might increase his cost.

Another difficulty that the growers experience is that the demand on his purse is not uniform. He has excess demand at some part of the season and therefore it becomes difficult for him to regulate his supplies.

Such system may be possible to work if co-operative sugarcane supply societies are established but it is a question of time.

51. It is quite possible to extend the crushing season by the introduction of early and late varieties, but the difficulty is how to bring it into effect and this question has already been dealt with in 49.

52. The Imperial Council of Agricultural Research is spending some money on investigation of problems in connection with the cultivation of sugarcane and for the last two years the Agriculture and Co-operative departments are also doing some work with the money that they got out of the sugar excise. The work is very enormous and what is being done is too little to achieve any appreciable improvement in the cultivation of cane. If the sugar industry of this country is to keep pace with the sugar industry in other parts of the world and if it has to stand on its own legs after the end of the protective period in 1946 it is absolutely necessary that very great improvement should

be brought about in the quality of cane as well as in its supply to the factory.

There are of course other problems connected with the sugar industry on which depend its existence and efficiency such as the utilisation of by-products and the arrangement for marketing of sugar. To carry out all these objects the limited resources which the Imperial Council and Agriculture and Co-operative departments possess at present are quite inadequate. Therefore much larger funds should be found to meet these requirements. Those funds in my opinion should be about 60 lakhs a year, at least half of which should be provided out of the excise duty on sugar and the other half should be found by the Industry.

66. The main deterioration of sugar in storage is due to moisture which the sugar catches from the ground. Although the floors are all cemented and we use wooden stands about one foot in height for staking the bags on them, yet during the rainy season the lowest bag catches moisture.

We are told that to a certain extent sugar also deteriorates on account of sudden and quick changes in weather and temperature.

The quality of sugar does effect the degree of the damage done by the moisture. The lower the polarisation of sugar the greater the chance of damage from moisture. Inferior sugar catch moisture and lose colour more quickly than the 1st white sugar.

68. The keeping quality of sugar is increasing progressively. The factories are taking to manufacture only one class of sugar of high polarisation and are giving up the production of inferior sugars. This in itself leads to greater keeping quality.

The factories are also improving their godowns so that chances of damage from moisture may be reduced.

Some factories are taking to carbonisation process which improves the keeping quality of sugar.

79. For the newly established factories I think during the period of protection a fair return should be 10 per cent. on Block account because when these factories were established the rates of interests at which money could be had were as high as 7 to 9 per cent. and some factories floated debentures for fixed periods at higher rates of interests. A large number of shareholders also invested money in sugar industry after borrowing at high rates of interest in the hope that they will get handsome dividends, and would be able to repay their loans, but for the last four or five years their hopes have not been fulfilled. In order to save these small investors and to inspire confidence in them for investing money in future in industries it is necessary that before the protective period ends these people should be in a position to earn at least their capital in the form of dividends.

It is also necessary for the industry to stand on its own legs after the expiry of the protective period. They should build good reserves. If a provision is made for a 10 per cent. on Block, part of it can be paid as dividends and part may be kept as reserve. If necessary a compulsory provision may be made that so much percentage of profits will have to be kept as reserve.

87 and 88. There is some fluctuation between wholesale and retail prices. The reason is that the factories do not maintain their own retail depots and then there are 3 or 4 persons between the factory and the retailer and charges of all fall on the sugar that is sold by the retailer. The dealers have ordinary shops and godowns for storing sugar and the sugar does not catch moisture during this storage.

89, 90 and 91. Some of the Indian sugars which are of lower polarisation do deteriorate more quickly than Java, but some of the standard Indian Sugars are as good as Java both in quality as well as in keeping properties. The Director of Sugar Research Institute, Cawnpur has prepared a detailed survey on quality of Indian Sugars and he is of opinion that the quality of

Indian Sugars is making improvement very rapidly and a number of them compared very favourably with Java. We notice a marked tendency among all the sugar manufacturers towards the improvement of quality both as regards colour and grain. We think if no crisis arose in the industry and it is permitted to establish itself on the sound lines during the remaining period of protection, in the course of the next 2 or 3 years, at least 80 per cent. sugar produced in this country will be as good as Java.

Some European and European managed hotels have liking for Java Sugar, but I think that will also be replaced by Indian Sugar because as stated above some of this sugar is even now equal to Java.

92. The manufacturers generally carry stocks upto the end of July as they try to clear their goods before the rainy season, but during the present season in my opinion more than half the factories will have to carry stocks till about the end of October, as demand for sugar is becoming graduated and dealers do not want to take unnecessary risk.

Last year the dealers purchased large quantities of sugar and they suffered losses on account of heavy fall in prices of sugar in August and September.

The stocks of manufacturers are usually financed by bankers. We have arrangement with our bankers under which they charge us 4 per cent. interest and salary of the godown keeper and we have to maintain a margin of 25 per cent. on the market value of goods *minus* the excise duty.

93. A marketing survey of the Sugar industry would be very useful as it will give us some idea of the annual consumption of sugar in this country and also its trend in the near future. The information obtained by this survey will also enable us to decide if any restriction has to be placed on the production of white sugar by the factories, *i.e.*, if any quota system has to be introduced so far as the production of sugar is concerned.

This survey will also be useful and necessary in case a Central All-India selling organisation is to be established.

This question was discussed in detail at the recent meeting of the Indian Sugar Committee at Simla and it was decided that the Imperial Council should undertake this work and they made a grant for this purpose and the marketing officer attached to the Imperial Council has undertaken to start this work. In my opinion Imperial Council may not be able to spare all the necessary funds for the purpose and therefore it may take a long time to complete this survey if it is left entirely to the resources of the Imperial Council. In my opinion the Government should contribute a special grant for this purpose so that this work may be completed without delay.

94. In our opinion a Central All-India Selling Organisation is an urgent necessity for the sugar industry under the present circumstances. We believe a large number of difficulties in the sugar industry at present are due to an uneconomic level of prices prevailing for sugar, though at times these difficulties are enhanced by untimely imposition of increase in excise duty and unfair fixation of price of raw materials. On account of disorganisation in sales and cut-throat competition of the factories sugar is being sold at rates which could never be thought of. If the present rate of sugar continue I am certain all the factories which have a capacity of less than 800 tons a day will have to close their doors and will not be able to work next season unless the price of cane also drops to an uneconomic level. It is also possible that even bigger factories may have to face a very serious crisis.

As a matter of fact the consumer is now getting almost the whole of the advantage or even more than what he could expect out of protection. There is no reason that when he could afford to pay Rs. 12 a maund in 1932 or Rs. 10 a maund in 1934-35, he should now get all his requirements at about half the price, thus depriving the manufacturer as well as the grower of all the benefits.

It can even be argued that in the case of a luxury article like sugar it does not matter even if the consumer does pay a lightly higher price in order

to develop the resources of the country and enable the cultivator to earn a decent living.

It is true that the consumer is not responsible for this state of affairs but it is the duty of the state to end this state of affairs as soon as possible. This can only be done if a Central Sale Organisation consisting of representatives of the industry, the Government, the Trade and the Grower is set up so that they may organise proper sale and sell sugar at an economic and reasonable price. I am not in favour of setting up a sale organisation which may be controlled by only one section of the industry as the aim of the sales organisation will be defeated if prices are raised to a higher level than what is exactly necessary and this is likely to arise if the sales organisation is subject to sectional control.

95. We are in favour of the standardization of Indian Sugars and the work in this connection that is being carried on by the Director of Imperial Research Institute, Cawnpur, is very appreciable and we think standardization on the basis that is being carried out by Mr. Srivastava is satisfactory.

98. The establishment of the futures or terminal market is receiving the attention of the Imperial Council of Agriculture Research and the Director of Imperial Institute of Sugar Technology and the Marketing Officer of the Imperial Council are carrying on investigations in this matter and are negotiating with the merchants and the industry for the establishment of such a market.

In our opinion when the Sugar industry has so much advanced the establishment of futures market or terminal market is essential to keep healthy tone in the market of Sugar.

99. As stated before there are no reliable figures about the consumption of sugar in India but according to the general belief it may be taken as 1,100,000 tons. The lower price of sugar tends to increase the consumption of sugar as India is already much under-fed so far as the consumption of sugar is concerned. The Director of Imperial Institute of Sugar Technology says that the *per capita* consumption of sugar in 1931-32 was 6.1 lbs. sugar and 17.6 lbs. gur making a total of 23.7 lbs. and in 1936-37 the figures were 6.4 lbs. sugar and 26.6 lbs. gur making a total of 33 lbs.

100. It is very difficult to say to what extent factory sugar is replacing gur as both sugar and gur industries are progressing side by side. In the sweetmeat trade generally white sugar has practically replaced gur completely.

106. The molasses are sold through agents to petty dealers. From some factories, some foreign companies purchase molasses for export. For the sales that are made through agents a commission is paid at the rate of $\frac{1}{2}$ pice per maund. The purchasers who purchase molasses take f.o.r. delivery at the factory and carry them in tank wagons or in drums.

Claim for protection.

108. The duties imposed under the Sugar Protection Act of 1932 have been quite effective except for a small period in 1934 when Java began to bring sugar into India at unremunerative prices.

109. The question of quantum of protective duty is now more academic than real because the price of Indian sugar has lost all relations with the prices of imported sugars and the India sugar is selling at a much lower price than the price of the imported sugar.

In the interest of the cane growers, the manufacturers and the Government which now realise about 3 crores 75 lakhs of revenue from excise it is absolutely necessary that the protective duty should remain at a level which should prevent imports of foreign sugar into this country. What this rate of duty should be it is very difficult to say because duty depends on the price at which the Indian Sugar should sell. The present prices of Indian sugar cannot be a correct criterion in arriving at a right conclusion about this

rate of duty because the present price is uneconomic and if it does not go up a large number of factories will close down, causing in turn great hardships to the cane producers, small investors, and loss of revenue to the Government.

Before the exact rate of duty can be suggested for the remaining period of protection it is necessary that we should be able to decide what should be the size of an economic unit in India and also what should be the minimum price of cane that should be paid to the grower because on the decision on these questions will depend the cost of production of sugar in India. This will enable the Board to fix a reasonable selling price for Indian Sugar. In our opinion the import duty should be fixed at the rate of Indian price *minus* price of Java sugar *plus* rupee one per maund for difference of quality, etc. In order to keep contingency in view it is necessary to add rupee one to the difference between the fair selling price of Indian sugar and imported price of Java sugar.

For determining the rate of protective duty we shall always have to take the sale price of Central United Provinces say from Bareilly in a distant port like Madras. On the present rate the sale price of Bareilly sugar will be roughly Rs. 4 12 as. *plus* Re. 1 8 as. excise, *plus* Re. 1 4 as. railway freight making a total of Rs. 7 8 as. Out of this we should deduct the Java cost price of Rs. 2 8 as. per maund. It gives a difference of Rs. 5 per maund and to these Rs. 5 may be added 8 as. for difference of quality and 8 as. for contingency, i.e., making a total protective duty of Rs. 6 per maund or in other words Rs. 8 per cwt. In short the rate of protective duty should be kept fairly high. It will not do any harm to the consumer as the price of Indian sugar has now been controlled by internal competition. It will give reasonable chance to industry to expand and enable him to pay reasonable price to the grower for cane because if the grower cannot dispose off his cane at a paying price a serious agrarian situation might arise specially in the United Provinces and Bihar where payment of land revenue and irrigation dues mainly depend upon sugarcane. It will also not injure the finances of the Government of India as on whatever little imports we have of foreign sugar a higher duty will give them higher income.

110. This question is rather more important from the point of view of the industry than the exact rate of duty for the remaining period. I think State assistance is needed for the Industry in four directions—

- (i) The State should provide a large sum of money, say, about 50 lakhs preferably a fix percentage of the sugar excise at the rate of 2 as. in the rupee for the development of sugarcane and on research of other technical subjects and on allied matters. The Government now gives about 7 lakhs a year to the provinces out of the excise and gives a grant of about 5 lakhs to the Imperial Council in addition to maintaining the Sugar Research Institute of Cawnpore and the cane breeding station at Coimbatore and Karnal, etc. This assistance is nothing as compared to the magnitude of problems and the rapidity with which improvement in these directions is needed. On improvement in cane depends the efficiency of the industry and ultimately its existence because unless the quality of cane become the same as in Java or other foreign countries it will be difficult for the sugar industry in India to stand on its own legs at the end of the protective period. While progress has been made during the last six years on the manufacturing side of the industry both in regard to efficiency in terms of sugar percentage and also in regard to manufacturing expenses similar progress had not been made in regard to the cost of cultivation of cane and quality of cane. Some people thought that the cost of cultivation of cane to-day was very near that of 1931-32 whereas during the same period the manufacturing cost had come down by 40 per cent.

- (ii) The State should give assistance to the industry in the proper utilisation of its by-products specially the molasses. When the 1st Tariff Board reported they calculated the price of 10 as. 8 pies per maund for molasses at the beginning of the protective period and 6 as. 9 pies at the end of the protective period, but on account of phenomenal development in the sugar industry the molasses practically lost all their value for the 2nd or 3rd year of the protection and now it is becoming a problem with some of the factories now to dispose of the molasses. The State should seriously consider the question of giving permission to the selected factories to manufacture power alcohol from molasses. In my opinion it will still be better if the State sets up one or two state-owned and state-controlled central distilleries in each area of sugar production and purchase all the molasses of the factories every year. I have no doubt that the industry would like to take up this work itself, but if may be in the larger interest of the country and administrative difficulty on account of which the Government is afraid in giving permission to private concerns may be solved.
- (iii) The State should help the industry in setting up an organisation which should organise the sales in an efficient and economic manner. It might be said that it is for the industry itself to organise such a body but sight should not be lost of a fact that if for any reason the industry is not able to do it themselves how much harm would be caused to the interest of the country, if a number of factories close down on account of crisis in sugar prices and if the price of cane goes down to an uneconomic level. As welfare of a large number of cane-growers is involved it is necessary that the price of sugar should not go below a certain level in order to enable the factories to pay a reasonable and economic price to the growers because the price of sugar and cane are bound to rise or fall together.
- (iv) The intense traffic of sugarcane carriage has caused a tremendous strain on the existing roads and in order to save the bullocks of the growers it is necessary not only to maintain the existing roads in good order but also to lay and metal certain length of milage round about each factory. It is, therefore the duty of the Central Government to give the subsidy out of excise to the Provincial Government for the development of roads in the sugarcane areas.
111. There is no effect of import duty on molasses and as far as I think it has not effected adversely any industry in India because the molasses in India can be had for nothing.

(22) *Letter, dated the 24th June, 1937, from the Indian Chamber of Commerce, Lahore.*

With reference to your letter No. 173, dated the 12th May, 1937, in connection with the inquiry by the Tariff Board to ascertain the extent of protection required by the Indian Sugar Industry during the period 1938-46, I am directed to submit the views of my Committee on the subject.

The sugar industry as it is well-known, is yet in its infancy, although a remarkable progress has been made during the period of protection under the Sugar Industry Protection Act, 1932. The increase in number of Sugar Mills, from about 57 to 150 with the proportionate increase in the production of Sugar from 4½ lakhs tons in 1932 to 11½ lakhs tons in 1937 during the protection period proves beyond doubt the country's splendid aptitude, capacity and power for industrialization provided the Government lend their support and accord adequate protection to the national industries against

their better organised foreign rivals. My Committee are fully cognizant of this fact that it was due to the protection, the country became self-sufficient as far as sugar is concerned.

At the time the Tariff Board recommended protection the molasses were being sold at a rate ranging between Re. 1 8 as. to 2 per maund. At present the molasses have stopped to fetch any price and the mills are in fact compelled to pay some thing from their own pocket for the removal of the molasses. The percentage of molasses is about 4 per cent. of the total cane crushed so that for every 100 maunds for which the millowner pays he really gets only about 96 maunds of cane.

Now let us examine whether the sugar mills are actually working under loss or profits, due to the enhanced excise duty of about Re. 1 8 as. per maund. The following table shows that the average percentage of recovery of sugar from cane factories in India is slightly above 9 per cent. as compared with 12.35 of Java:—

Year.	India.		Java.
	Average. Per cent.	Maximum. Per cent.	Average. Per cent.
1931-32	8.89	10	11.92
1932-33	8.66	10	11.16
1933-34	8.80	10	12.64
1934-35	8.66	11.10	12.35
1935-36	9.29	11.34	...

Now the ruling sale price of sugar is about Rs. 6 per maund including the Excise Duty at Re. 1 8 as. per maund. Thus the balance of Rs. 4 8 as. per maund includes cost of production, depreciation, income tax and profits, etc., against the sale price of Rs. 7 8 as. per maund in 1934 without Excise Duty. Under the circumstances with the present 9 per cent. of recovery of sugar it is impossible to run the factory profitably; but it can be possible if the average percentage of recovery is 10 per cent. or more than that. The effect of the Excise Duty as far as the Punjab is concerned has proved very serious as some of the companies had to close their doors causing a great loss to the investing public. A new factory set up at Pattoki could not be worked and a factory at Sonapat in which the Punjab Government was largely interested has since gone into liquidation. A factory at Bhalwal owned by Malik Sir Feroze Khan Noon and his family has closed its door and another factory, i.e., the Phulwan Sugar Mills has also gone into liquidation.

There is no denying the fact that the country has due to grant of production benefited in other respects. India has checked the outflow of Rs. 15 crores the price paid for the imported sugar in the past because there is hardly any necessity of imported sugar except of special quality to meet the needs of fastidious people as is evident from the following table.—

Year.	No. of firms working.	Cane-factory Production.	Sugar refined from Gur.	Khandsari (Conjectural estimates).	Total production of Sugar in India.	Import of sugar.
		Tons.	Tons.	Tons.	Tons.	Tons.
1931-32	32	158,581	69,539	250,000	478,119	511,319
1932-33	57	290,177	80,106	275,000	645,383	365,707
1933-34	112	453,965	61,094	200,000	715,059	249,776
1934-35	130	578,115	39,103	150,000	757,218	220,328
1935-36	137	912,000	54,600	125,000	1,091,600	198,888
1936-37 (about)	150	975,000 (about)	50,000 (about)	125,000 (about)	1,150,000 (about)	28,000 (about)

The sum thus saved is distributed amongst factory-owners, their employes, the cultivators, etc., etc. It has also eased the problem of unemployment by employing about 2,000 Science Graduates, 10,000 educated persons and numerous other skilled and unskilled labourers leaving apart those who are engaged in cultivation.

Due to the impetus provided by the protection there is tremendous increase in the total area under cultivation with consequential increase of average cane production per acre and the percentage of cane crushed.

Year.	Total Acreage under sugarcane.	Acreage under improved varieties.	Calculated production of sugarcane (10-11 factories).	Average cane production per acre.	Yield of Raw Sugar (Gur).
			Tons.	Tons.	Tons.
1931-32	3,076,000	1,170,478	43,316,000	14.1	4,116,000
1932-33	3,435,000	1,845,788	51,129,000	14.9	4,859,000
1933-34	3,433,000	2,295,257	52,455,000	15.3	5,055,000
1934-35	3,596,000	2,445,719	54,346,000	15.1	5,268,000
1935-36	4,020,000	2,700,000	61,102,000	15.2	5,908,000
1936-37 (about)	4,431,000 (about)	2,800,000 (about)	70,170,000 (about)	16.5 (about)	6,717,000 (about)

A glance at the Table will show that the area under improved variety came to about 67 per cent. of the total area as compared with 36 per cent. in 1931-32.

The process of supplying the aggregate needs of the country is practically complete, surplus stocks of sugar are bound to accumulate and therefore it is essential to provide facilities to compete in foreign markets and particularly in United Kingdom, which depends mostly upon imported sugar from non-Empire countries. Investors in India are looking forward towards that market with great concern and for that the standarization of the quality of the indigenous sugar should engage the immediate attention of the Government, the absence of which is adversely effecting the industry. Java sugar has another distinct advantage over Indian Sugar in the respect that it can be preserved for a longer periods in varying seasons. In addition to this improved cane is not easily procurable; the bye-products like molasses are totally a waste; cane crushing season is very short; the average percentage of recovery of sugar from cane is much less than that of other sugar producing countries and combined with other imperfections the cost of production of Indian Sugar is higher than that of other countries. In order to enable the industry to work to its maximum strength the Government ought to carry on more research work and adopt suitable measures to decrease the cost of production of Indian Sugar.

The recent increase of excise duty from Re. 1 5 as. to Rs. 2 per Cwt. has already proved detrimental to the healthy growth of sugar industry and this attitude of the Government is regrettable. Many factories have failed since then as I have already explained above. However the industry has a bright future in sight provided the protection is continued, excise duty is lowered and liquid fuel is permitted to be manufactured from molasses. The industry is not yet self-supporting and independent to compete favourably without the protection, as it is a well-known fact that Java has got more than three million tons of sugar stocks and is looking for an opportunity to dump

the same into India. All round progress shown by this industry still requires further protection for development in many other respects and any midway policy adopted by the Government would not be strictly in keeping to their acclaimed policy and tents of encouraging national industries.

In conclusion my Committee hope that their views will receive due consideration of the Tariff Board and the protection to the sugar industry will be extensively offered so that this juvenile of the few staple industries of India may not be penalised unjustly.

(23) *Resolution adopted at the Annual Session of the Federation of Indian Chambers of Commerce and Industry at Delhi on the 8th April, 1937.*

Resolution.—(a) The Federation places on record its gratification at the progress made by the Sugar Industry in this country fully justifying all the principles of protection and views with great concern the attitude of the Government of India towards it, specially the recent increase in the excise duty on the eve of a regular enquiry by the Tariff Board. Such increase is harmful to the interests of the manufacturer, the consumer and the agriculturist.

(b) The Federation further urges the Government of India to take steps so that sugar may be exported from India into the United Kingdom, free of duty, or at least on payment of the same rate of duty as on certified colonial sugar.

(c) The Federation further urges the Government to take all necessary steps for the proper utilisation of molasses, specially the manufacture of power alcohol.

(d) The Federation further protests against the action of several railways in increasing the railway freight on sugar.

(24) *Letter, dated the 25th June, 1937, from the Indian Merchants' Chamber, Bombay.*

SUGAR INDUSTRY ENQUIRY.

With reference to your letter No. 173 of the 11th May, 1937, I am sending to you herewith the replies of my Committee, with six copies, to the questionnaire of the Board. I may add that my Committee have answered only questions involving general matters of policy and principle.

Enclosure.

MEMORANDUM SUBMITTED BY THE COMMITTEE OF THE INDIAN MERCHANTS' CHAMBER IN REPLY TO THE QUESTIONNAIRE OF THE TARIFF BOARD RE: PROTECTION TO THE SUGAR INDUSTRY.

108. The protection recommended by the Tariff Board appointed in 1930 was embodied in the Report submitted to the Government of India on the 29th January, 1931, and the Government of India published their recommendations by a Resolution, dated the 30th January, 1932. These recommendations stabilised the position of the Industry and gave it a measure of protection for which it was asking for a long time. There are industries in this country the history of which was written in a series of failures for a number of years and the Sugar Industry was one of them. Several companies were started and several had to go into liquidation with the result that it had commonly come to be accepted that the Sugar Industry would not prove successful in this country. The protection given, however, under the recommendations of the Tariff Board Report changed all this and brought about a condition of things under which sugar companies were not only enabled to maintain themselves against both external and internal

factors which otherwise worked for their disintegration but were also able to show a rapid and quick progress. It led to the establishment of numerous sugar companies and to the investment of about Rs. 25 crores in the Sugar Industry. The number of sugar factories in 1930-31 was 29, in 1931-32 the number was 57 and is now (1935-36) 155. India imported in 1930-31 from foreign countries 901,200 tons of sugar (excluding molasses) of the value of Rs. 10,54 lakhs. The development of sugar factories in this country under the measure of protection referred to above led to the gradual decline of imports of sugar till the figures now (1935-36) are 201,200 tons (1935-36) of the value of Rs. 1,91 lakhs. The production of sugar (including sugar produced by indigenous sources) *pari passu* has increased considerably and statistics with regard to the same are as follows:—

	Tons.
1930-31	351,000
1931-32	478,000
1932-33	645,000
1933-34	715,000
1934-35	767,000
1935-36	912,000

The rise and growth of sugar factories in the country has led to the import of sugar machinery as India is not still manufacturing machinery of this kind. The expansion of the industry has also reacted in a very beneficial manner upon the agriculture and the result is that the production of sugarcane has tremendously increased as will be seen from the following figures:—

Area under sugarcane cultivation--

Year.	Total area under sugarcane cultivation.	[In 10,000 acres.] Area under improved varieties of sugar- cane cultivation.
1930-31	2,902,000	817,094
1931-32	3,076,000	1,170,478
1932-33	3,435,000	1,845,788
1933-34	3,433,000	2,295,257
1934-35	3,602,000	2,445,719
1935-36	4,141,000	3,071,153

Prices of Java sugar may well be compared with the prices of the Indian sugar during the last quinquennium of sugar protection. All these figures and statistics show how the sugar industry has come to stay in this country and how the protective duties have stabilised the position of the industry. India possesses large scale industries in cotton, cotton textile, coal, iron and steel, matches, cement, etc., and to this may now well be added the Sugar Industry. There is still a very large field before this industry in this country, as the *per capita* consumption of sugar is still very low on account of the poverty of the people. Sugarcanes eaten by large sections of the people have, to some extent, satisfied the need for sugar and the large gur industry carried on in villages and even on sugar plantations have also supplied the necessity felt by human beings for sugar. It may be expected that with the growth of education, cane sugar may take the place of both these abovementioned substitutes. It may be that sugar-canes or gur taken by themselves are healthier dietetic habits than sugar; but what we are concerned with here is, is the progress of the industry as a whole. India is a large agricultural country with hundreds of thousands

of villages and it is a well observed thing that there is a great fondness for sweets among Indian people and there are sweet shops in practically all these villages. All this tends to show that the sugar industry, even though there may be periods of depression, has come to stay in the country and will fulfill the long felt want. It is an industry which is based upon the necessities of life and not upon any luxurious or acquired tastes.

All these results abovementioned have been achieved by the protective duties and their continuance for sometime to come is needed for warding off any dangers, that may be there threatening the industry which may be said to be still in its infancy.

The history of prices of this industry during the recent years is interesting. The Java sugar was formerly selling at prices at which the local sugar could not compete with it. With the protection given to it, however, the parity was in India's favour and the Java sugar had its prices raised recently. The cause of this rise in prices of Java sugar may be the curtailment of production in Java as also perhaps a sort of window dressing to show to India that the Java sugar prices are so high that it will never be able to compete with Indian sugar at its present prices. Unfortunately, it is not possible to give comparative figures with regard to the cost of production of Java sugar. It has happened several times in the past that while the Tariff Board is examining the case for protection of some industry or the other, the foreign manufacturers or the merchants interested in foreign products competing with the local products cannot or will not give information with regard to the foreign industry which bears largely upon the question at issue. It is likely that importers of Java sugar or sugar merchants generally may present to the Tariff Board their own view point with regard to the protection for the sugar industry. My Committee suggest that the Board should ask these merchants to produce statistics showing the cost of production of the Java sugar as this is essential for purposes of comparison. The prices of Indian sugar are at present almost Rs. 4 per cent. below Java sugar price. My Committee, however, very earnestly urge that this difference should not mislead anyone into believing that Indian sugar has now so established itself that it does not stand in need of the continuance of the protection it enjoys. The low prices may be and are perhaps due to internal competition. Such internal competition, however, may disappear through several causes and the production costs and other factors may compel the prices to rise up. It may also happen that the Java manufacturers may, in order to regain India's market have at once a severe climb down in their prices. My Committee consider, therefore, that on the basis of prices there can be no grounds for lowering the protection hitherto given to the sugar industry.

The reference to the prices in the above paragraph will show how even under the present protection consumers are not charged anything abnormally. My Committee have always considered that while protection is given to any industry in the general interests of the country as a whole, consumers may have to undergo some sacrifice. This sacrifice, however, is in more cases than one more apparent than real for the advantages which the consumers as a class gain through the development of that particular industry consequent upon the protective duty may outweigh the disadvantages, just as is the case with the State. It is in fact a cruel mockery on the part of certain so-called Free Traders, whether in the official or non-official block, to bring forward an excuse of consumers in season and out of season, to justify their pet theories and also to justify them in rejecting the fair and just claims of any industry for protection. In a country steeped in poverty like India with their masses going on one meal and with men and women half-dressed surely the pretext of any sympathy for consumers is only hypocritical and misplaced. It will be only if the industries are developed that these masses of people will be able to emerge from their half-starved and half-clothed condition. With regard to the sugar industry the prices have up to now been so well regulated that consumers cannot complain of

them. As pointed out already even now there is a difference of Rs. 4 per cent. between Indian sugar and Java sugar and so the consumer has no complaints whatsoever. Even if the Indian sugar prices rise in future it may be considered as a contingency of the industry and as not a permanent factor, for it must be taken into consideration that with a prosperous industry more factories are bound to come up and there is sure to be internal competition resulting in keeping the prices on a fair and rational level.

The agriculturist has benefited largely by the growth and development of the sugar industry. It is estimated that the agriculturist has received about Rs. 8 crores through this every year. Surely this is a factor which cannot be lost sight of and which Government, with their expressed sympathy for the agriculturists, cannot consider as an irrelevant or a negligible factor. Prices of sugarcane in the northern tract have been fixed and it is up to Government authorities to see that the manufacturers are paying these prices in all good faith. These prices may be increased in future if the conditions of the industry at the time warrant that an increase may be made in the prices; in any case the minimum price for cane should be statutorily fixed. My Committee, however, are of opinion that a more rigid scrutiny than is perhaps now done, should be made with regard to the purchase and sale of these sugarcanes by the different factories and abuses, if any, should be weeded out. The industry has also given employment to large numbers and in these days of unemployment this particular factor cannot be lost sight of. The factory is run practically for about 8 months. So far as the information of my Committee goes, many factories manage to keep the labour force they employ in the regular season. Government may well consider the question of inducing the factory owners to see that, as far as possible, the labour employed by them is continuous. Steps should also be taken to see that the housing condition of these labourers and other amenities of life are fair and decent. My Committee hope that the factory owners do not want to take advantage of the protection they enjoy to have any exploitation of the labour they employ. They urge on grounds of general humanity as also the recognised canons of labour that the housing and other social questions should be thoroughly gone into by Government in consultation with parties concerned, so that the industry while it enjoys protection, passes on the benefits to its labour force.

109. The Board has been asked to consider whether it is necessary to continue protection to the present extent or to a greater or lesser extent. When the last Board made their recommendations for protection, the suggested period was 15 years, during the first half of which protection was to be Rs. 7 4 As. and during the next half it was to be Rs. 6 4 As. Government, however, accepted the recommendation only so far as the first half of the period was concerned and for the second half stipulated that there would be a Statutory Enquiry, the measure of protection to be fixed after such an Enquiry. It would have been better if the measure of protection had been determined and given from the very beginning for 15 years. It is true that the period of protection is for 15 years, but this interrugnum of a Statutory Enquiry leads sometimes to an unsettlement of peoples' minds and consequently to unsettled conditions in the market. The stabilisation and growth of such industries is generally based upon the conviction and certainty about the prospects of the industry and the very fact that the industry has attracted Rs. 25 crores in such a short period tends to the belief that people have faith in the future of the industry. This faith would have been still stronger had there not been this interrugnum of the Statutory Enquiry. Since the last one or two years, there have been discussions going on and to some extent even an atmosphere of doubt or rather diffidence has been created partly due to the increase in the Excise duty and partly due to the impending enquiry of the Tariff Board.

The Committee of this Chamber are firmly and definitely of opinion that the measure of protection should be continued on the same scale and basis as it has been up to now. It may be argued that the sugar industry

has shown immense profits and that at present it is in a position to withstand foreign competition on account of the low parity of its prices. Such factors, however, in the opinion of the Committee, should not lead one to discount the immense value and importance of the continuance of protective measures for the industry. It must be remembered that though sugar industry is known in this country for a fairly long time, its state of prosperity and strength is seen only during the last five years. This is too short a period for one to judge about the inherent strength of the industry. There may have been certain factors evidenced during the last five years which may have worked for the rise and growth of the industry and may have led to the successful results that have been shown all over the country. These factors may not be prevalent sometime after. The enthusiasm of the investors for a particular industry shows several times a tendency to disappear on the appearance of certain factors which were not noticed before. Thus, for instance, the imposition of sugar Excise duty may lead to a reaction against the industry even though the industry may, for the present, be able to pay the Excise duty levied. An industry is not always able to remain in a flourishing condition. Thus, for instance, the cotton textile industry, which is one of the biggest industries of the country has shown several ups and downs and even with the large measure of protection given, it has not still been showing any basic and inherent strength. Declaration of dividends, the Committee of the Chamber feel, should not be considered as a sign that the industry has come to stay and is no longer in need of any further protection.

The Sugar Protection Act should also contain specific provisions to the effect that if during the period of protection any action is taken in a country, the imports of sugar from which are competing with Indian sugar, in the nature of special subsidies, manipulation of Exchange, devaluation of currency, special assistance by public or private agencies and manipulation of freight rates, it should be immediately counteracted by a variation of the rate of the protective duty so as to maintain intact the level of protection afforded to the industry. The principle of such changes in duty during the period of protection is recognised by Section 4 of the Indian Tariff Act, 1934, and my Committee request the Board to recommend a specific provision to that effect in the Sugar Protection Act itself.

110. My Committee have in their reply to the above questions strongly urged the necessity for continuing the present protection to the sugar industry. This by itself, however, will not suffice and the following other measures may be suggested for helping the industry:—

- (a) Full freedom for the utilisation of all bye-products and expert advice regarding the process and possibilities of such utilisation, should be given. The proper utilisation of the bye-products of an industry plays an important part in determining the margin of profits.

Molasses is the most important bye-product in sugar manufacture. Restrictions, if any, on the manufacture of alcohol from molasses should be removed. Molasses constitute a big bye-product and prohibition in the way of manufacture of alcohol from molasses constitutes a great handicap from which the Indian sugar industry suffers. My Committee are informed that factories in Java are allowed to manufacture alcohol from molasses which enable them probably to send out methylated spirit, etc., in competition with similar products in this country. They understand that in some of the Indian States also, Mysore for instance, such alcohol is being allowed to be manufactured. If this freedom is denied to British Indian factories, their cost in relation to cost of factories in States would be higher to the extent such products are wasted; and this element of cost would be a handicap in business competition.

- (b) There should be a substantial grant made to the Imperial Council of Agricultural Research for development and research work. Even though sugar factories have developed fairly well, there are still several problems confronting them which require a good deal of research work for thought and consideration. A good amount, therefore, placed at the disposal of the Imperial Council of Agricultural Research would go a long way towards helping the industry on the research side.
- (c) My Committee are informed that representatives of some Indian States have proceeded to Java to negotiate for heavy imports of sugar in these Native States Ports in consideration of certain concession. They hope that Government will find out if this is true. If the measure of protection already given to the industry and proposed to be given in the future has to bear any substantial fruits, Government should see that what they give in the nature of protection is not taken away by any backhand subterfuges or measures. It is a very serious question which should be considered by Government. The Government of India have been able recently by their strong measures, to put down smuggling going on in several parts of the country with regard to diamond, silk, silver, etc., and my Committee hope that they will concert equally strong and powerful measures to put a stop to the smuggling in the sugar industry if it is being carried on. My Committee wish to draw the attention of the Board to the following figures of imports of sugar into Kathiawar Ports and imports of sugar into British India from Kathiawar through Land Customs Line:—

	1931-32.	1932-33.	1933-34.	1934-35.	1935-36.
	Tons.	Tons.	Tons.	Tons.	Tons.
Imports of sugar into Kathiawar Ports . . .	93,451*	63,788	73,390	110,963	87,964
Imports of sugar into British India from Kathiawar across the Viramgam-Dhandhuka Land Customs Line .	59,564	34,357	26,370	27,580	26,780

* Include molasses.

My Committee are also informed that in some Indian States duties are levied on the imports of Indian sugar. They recognise that under existing treaty arrangements such States have the freedom to do so; but it is anomalous that sugar produced in the self-same State should be entitled to free entry in British Indian markets; and be in a position to compete with the Indian product. They suggest that where such duties are levied in Indian States, corresponding duties on products of such States should be levied on entry into British India.

- (d) Another direction in which Government can help the industry is in the matter of rationalisation. Efforts on stabilisation of prices will only be possible with Government assistance. The industry by itself cannot govern its affairs and the State may give a protective hand in getting the industry properly organised. The State may also secure for the industry preferential duties in United Kingdom now available to the

Colonies. The State can also undertake further research which would help the industry and give increased financial grants for the purpose.

General.

The Government of India forewent a certain portion of their revenues when they gave protection to the Sugar Industry. But this loss is made up to some extent by the Excise duties and my Committee presume that if the present excise policy is modified by allowing the molasses to be converted into alcohol, Government will get a greater excise revenue. There must have been an appreciable advance in land revenue in the provinces where this sugar industry is now developed. It is a good money crop and agriculturists, through ready sales of their sugarcane crop, get the wherewithal to pay the land revenue.

The Committee of this Chamber are informed that the contracts between sugar manufacturers and merchants threaten to be more or less one sided and partial and so they suggest that such contracts should be on just, fair and equitable terms. The Committee also urge the standardisation of the qualities of sugar as without this it will be very difficult for Indian sugar to compete with foreign sugar. Not only that, but with International Sugar Conferences a stage has come when India can no longer afford to go on with her antiquated methods of production and sale. Unless sugar is standardised, Indian sugar may not be recognised for international purposes. The standardisation will come in handy when India is able to export her sugar to foreign countries.

My Committee also strongly recommend that sugar manufacturers should be compulsorily required to supply statistics of production, etc.

A proper marketing Association, paying greater attention to publicity and creating increased demand for Indian sugar is another need to be met. Government should assist the industry by bringing about such an organisation.

In several advanced countries of the West and even in Japan, factories which are enjoying protection from the State are required to provide for admission of students as apprentices. This condition should be enforced here also and factories should be required to admit students for training purposes. It should also be laid down as under the Sugar Production Act of Great Britain that as far as possible preference should be given to Indians in the employment of technical and managerial posts and labour.

My Committee have seen the announcement in the papers that an arrangement was entered into at the Sugar Conference whereby India would not be allowed to export sugar. As my Committee have not received official proceedings of that Conference they cannot understand who was responsible for such an arrangement. As far as my Committee know, India was not represented by any manufacturer. Dr. Meek, who is reported to have represented India, is a Trade Commissioner and can by no means represent the interests of the sugar industry. It has been said that this was the rule observed with regard to all the countries and that they were all represented merely by Government officials. My Committee are informed that this is quite incorrect and that countries like Australia were represented by their manufacturers. A grievous wrong has, therefore, been done to this country in not sending any responsible representatives of sugar manufacturers and in foisting this wholly iniquitous condition upon this country that she will not be allowed to export sugar to foreign countries. My Committee emphatically condemn such an undertaking given on behalf of this country and urge that, as soon as possible, this arrangement should be rescinded and the Board should recommend strongly that this country should also be allowed export of her sugar to foreign countries. They have already indicated in an earlier paragraph the need for securing to Indian sugar the same preference in United Kingdom markets as afforded to Colonial sugar. The claim for preference should not be allowed to be forestalled by this arrangement of complete denial of export market for India.

(25) *Letter, dated the 1st May, 1937, from the Marwadi Chamber of Commerce, Limited, Bombay.*

I am forwarding herewith 6 copies of a representation addressed to you on the need for adequate protection to the Indian Sugar Industry. It is sincerely regretted that a delay of 2 days has occurred in despatching the representation. Originally it was the intention of my Board to submit an exhaustive memorandum discussing the comparative costs, etc. This took up much time. Later, however, it was preferred to make a rather general statement and defer the examination of detailed particulars to the questionnaire stage. In any case, the case for protection will be presented on behalf of the industry by the Sugar Factory-owners Association. So far as my Chamber is concerned, although it has a large number of factory-owners on its membership its attitude is necessarily of a more general character. Anyway, I am desired by the President of the Chamber to request you to waive the technical objection about the abovementioned delay and urge the Chairman of the Tariff Board to admit the representation and take it into consideration along with others.

Enclosure.

With reference to the Press Communiqué, dated the 5th April, 1937, issued by the Tariff Board, a copy of which was kindly forwarded by you to this office, I am directed by the Board of my Chamber to forward to you hereby for the consideration of the Tariff Board a brief statement of their views on the need for adequate protection of the Indian Sugar Industry.

2. My Board do not propose at this stage to go into details, which in any case will have to be closely examined in framing replies to the questionnaire which the Tariff Board will be issuing in a short time, but to confine themselves to the presentation of a rough outline of the case for protection. One reason for not submitting a comprehensive memorandum has also been the shortness of time accorded.

3. In the opinion of my Board, the protection given to the Sugar Industry has been justified by its results. The measure of its success has been so ample and convincing that unbiased public opinion is practically unanimous about the efficacy and propriety of protection in this field. The number of working Sugar factories (excluding refineries which remained out of the pale of protection) which was 29 in the beginning of 1931 when the last Tariff Board issued its report, rose in just five years to 140 in the 1935-36 season. A few more were under construction during the last year. The area under sugarcane cultivation during the period also rose from 2½ million acres in 1928-29 to 4 million acres in 1935-36, with a consequent increase from nearly 90 thousand tons of factory sugar and nearly 3 million tons of Gur in 1929-30 to nearly a million tons of factory sugar and nearly 6 million tons of Gur in 1935-36. Another important result which must be noted is the increase in the area of improved varieties of cane from 8 lakhs acres in 1930-31 to about 24½ lakhs acres in 1934-35, which is believed to have been further added to during the last two years. For a short space of 6 years this is by no means a mean achievement.

4. If we remember the important place which sugarcane has come to occupy in the agricultural economy of India we should have no difficulty in appraising the magnitude of this achievement and its far-reaching effects upon the well-being of the Indian agriculturists, particularly in the northern provinces. Of course this phenomenal increase in production has created new and complex problems which demand and, with the support of Government and the public, should be able to secure satisfactory solution.

5. The industry has given employment directly to the workers employed in the factories, and indirectly to those engaged in the various processes of

transport and distribution. It has improved the lot of the agriculturists in an appreciable measure, though the unfortunate tendency recently witnessed soon after the increase in the excise duty to obtain sugarcane at lower rates, even if economically justifiable must be deplored. There is, however, no gain saying the fact that the growers who sell their cane to the factories have derived considerable benefit. Though the other cane-growers whose produce is consumed mainly in the manufacture of "eating" Gur and whose numerical proportion is much larger have not received the same measure of advantage, yet it can be said without fear of contradiction that their position would not have been better if they had grown crops other than sugarcane.

6. In many quarters the apprehension was entertained that tariff protection would prejudicially affect the interests of the consumers. The Tariff Board of 1930-31 contested that view and the last six years have amply demonstrated how ill-founded these fears were. With the progressive increase in the Indian production, internal competition has been progressively reducing the price of white sugar to the consumer. With the result, that to-day Indian factory sugar has reached a price level which is even lower than the pre-war standard. As long as there was no indigenous article to challenge the supremacy of the Java variety, the price of sugar in India was kept rigged up at monopoly rates. And but for the emergence of a promising and hefty rival that the Indian Sugar Industry has already become, in times of scarcity sugar would have been offered to India again at fancy rates in future. It is a matter, however, of some concern that the different units composing the industry have not seen their way to a more united attitude and it is apprehended that there is little prospect of the present situation undergoing any radical transformation. This strong competition between the Indian factories is rather short-sighted for the industrialists but by no means an unwelcome consummation from the consumers' point of view. Let me also emphasise that this competition, though natural under any circumstances, is not due to perversity or anything of the kind, but in the recent conditions of the world market and Indian production, it has been inevitable. While it is possible and desirable that the different members of the industry should develop a wholesome measure of mutual understanding, there is reason to believe that the Indian consumer, thanks to protection, will continue to get sugar at reasonably low prices.

7. Protection has secured for the Sugar Industry what it has so far failed to do in any branch of Indian industry, viz., complete self-sufficiency in the country's requirements. In an uncertain situation such as is casting its shadow on the international politics to-day, the value of self-sufficiency in consumption goods of the nature of sugar can well be imagined. By developing into these proportions, during a period of probably the worst depression the world has ever known, the Sugar Industry has constituted an important relieving feature of the situation. The experience of this industry has given Indian capital courage and self-confidence which it lacked before and which, to our mind, hold the promise of a bright future for industrial development in India. Last but not least, it has increased the wealth of the country, or putting it in more popular terms, it has prevented the annual drain of 12 to 15 crores of rupees out of the country.

8. Even from a restricted administrative point of view, the growth of the Sugar Industry has had its advantages. My Board have no doubt that a comparative examination of the receipts of revenue from the various crops should lead to the conclusion that in the provinces concerned, receipts from land revenue and canal rates must have registered an appreciable increase. Indeed, so far as the latter are concerned, it is common knowledge that in the sugar-growing areas water rate has been increased from annas 8 to annas 10. Besides, in addition to the effect on railway returns, due to larger volume of freight, the receipts from import duty on machinery and the income and super-taxes from the sugar Companies represent an improvement to the central revenues. Of course, there is a gap between the amount of

loss to customs revenue through elimination of the import duty receipts and the returns of the sugar excise; but that is a problem which has been facing Government ever since protection was first granted and has been more or less provided for. Anyway that is scarcely an aspect that will come directly under the purview of your Board.

9. To summarise, looking at the situation from any point of view, protection granted to the Sugar Industry has proved a complete success and an undisputable benefit to the country as a whole. Further, in view of the greater possibilities still ahead and in order to consolidate the gains and stabilize the industry on a permanent footing, as well as to secure the just and rightful measure of benefit to the cane-growers, it is necessary that adequate protection should be continued for at least the remaining eight years of the period held by the last Tariff Board to be essential for the attainment by the industry of the maximum limit of agricultural and industrial efficiency. To-day the industry stands in as great a need of State support as ever. This is not because, as is erroneously believed and sometimes lightly remarked, Indian factories are suffering from any peculiar or perverse inefficiency but because the relative position of the Indian sugar *vis à vis* its principal foreign competitor, roughly speaking, remains what it was in 1930-31.

10. Any one conversant with the progress of the Sugar Industry should be aware that Indian factories have made admirable efforts to attain a higher degree of efficiency in all its branches. It is largely due to the initiative taken by the Central and Provincial Agriculture Departments and the encouragement given by the industry itself, that improved varieties of cane, bred and developed by the Coimbatore Research Station, giving a 50 per cent. higher yield per acre and with a superior sucrose content, have claimed a larger and larger area under their cultivation, so much so that within the last 6 years the improved area has extended to about 65 per cent. of the total area under cane cultivation. The percentage of recovery has also appreciably increased to an average level of about 9.25 per cent., roughly the figure which the Tariff Board expected the industry to reach at the end of the production period. The overhead charges per unit have also been, in a slight measure, reduced by several factories increasing their crushing capacity.

11. The sum total of the improvement thus effected has, however, been more than neutralised by the greater reduction in the cost of production of Java sugar. In the first place, the improved system of cultivation in Java is reported to be such that the same seed has been giving an yield of over double the number of canes of those in India. The ratio of recovery in Java has also been substantially increased and it is understood that it has reached the average of 14 per cent. The cost of sugarcane in Java, therefore amounts to less than half of that borne by Indian sugar factories. My Board are afraid that India cannot expect to reach the Java level of cost as she has certain peculiar and insuperable difficulties to contend with, such as the smallness of holdings, scattered cane-growing areas and so on. Even in order to reach a situation permitting of any reduction in the measure of protection, it should take many more years. It should not be forgotten that Java which has been eliminated from the Indian market is bound to make the most of any of the slightest chance available for effecting a re-entry into the market. To do so she is better equipped to-day than ever before.

12. Messrs. Bird & Co.'s latest weekly report puts the rate of Java sugar at Calcutta including duty at Rs. 9-15 per maund, whereas the fair selling price of Indian factory sugar should roughly come to about Rs. 8-4 per maund. Actually, however, the price is much lower. The present *ex-factory* rate for the Indian white sugar rules between Rs. 5-12 and Rs. 6-4 per maund. This is mainly the reason why the imports of Java sugar have completely ceased since the last 4 or 5 months. The present low price level of sugar, particularly since the increase in excise duty, leaves no margin at all to the much-maligned sugar industrialists or those large numbers

of people who have invested their savings in the industry. Indeed, a large number of factories are working at a loss. It should also be noted that the rate of Java quoted above is merely a nominal quotation as no imports are in fact taking place at present.

13. In this situation, my Board wish to point out that the gap between the effective rate of Indian factory sugar and the nominal rate of Java sugar is an exceedingly misleading circumstance. What the Tariff Board is to examine and find out is the present fair selling price of Indian factory sugar and the possible price level at which Java sugar, in an attempt at a price-cutting competition, might re-enter the Indian market. Having reached that stage, it will be for your Board to prescribe a protective duty which can be relied upon to act as an effective bar against Java or any other potential foreign competitor. In the opinion of my Board, on the facts known and examined by them, there is absolutely no warrant for lowering the measure of tariff protection. Indeed, if on a scientific scrutiny of the facts which your Board alone can wholly secure an increase is indicated, my Board have every faith that they will not hesitate to recommend such higher measure of protection as will not only stabilise the industry on a sound and permanent basis but also preserve and advance the supreme interests of the agriculturists with whose well-being and prosperity is bound up the economic progress of the country.

(26) *Letter, dated the 14th/15th July, 1937, from The Marwadi Chamber of Commerce, Ltd., Bombay.*

With reference to your circular letter No. 173, dated the 11th May, 1937, with which was forwarded a copy of the General Questionnaire issued by the Tariff Board, I have the honour to forward herewith 6 copies of my Boards' memorandum containing their replies to the abovementioned questionnaire for the consideration of the Tariff Board.

2. A perusal of the replies will show that every attempt has been made to state them as succinctly and lucidly as possible. Still if the Tariff Board feel that there are any points which require elucidation, my Board will be glad to depute their representative to tender oral evidence in explanation of such points.

3. The Chairman specially desires me to convey his thanks for the extension of the time for forwarding my Boards' views on the question up to the 15th July.

Enclosure.

MEMORANDUM SUBMITTED BY THE BOARD OF THE MARWADI CHAMBER OF COMMERCE, LTD., BOMBAY, ON THE GENERAL QUESTIONNAIRE ISSUED BY THE TARIFF BOARD.

7. (a) The size of an economic plant for a sugar factory is determined mainly by the capital available to the owner, the abundance or otherwise of the supply of sugarcane in the vicinity. Generally speaking, the larger the plant or its crushing capacity the less proportionately should be the overhead charges of a factory such as depreciation, managing expense, pay of skilled and technical staff, etc. This principle has, however, largely failed to operate in the case of the majority of Indian factories. The reason is that these factories as initially constructed were small in size, but that their crushing capacity was subsequently augmented by additional plant and machinery. In such cases, naturally, the saving affected is much less and in some cases practically negligible.

(b) In the Boards' opinion, a factory with a crushing capacity of 400 to 500 tons of cane per day is the smallest economic unit of production in the existing Indian conditions. Within small limits, the size of such unit

in Northern India varies from one in Western or Southern India according to the quality of the cane available and the duration of the working season.

8. Although attempts have been made to manufacture sugar machinery and its parts in India and it is even reported that practically a complete specimen equipment has been made in Calcutta, it is seriously doubtful whether such efforts have attained or are likely to attain in the near future anything like a commercial success. Up to the present, excepting tanks, pipes and other parts of simpler mechanism the industry depends upon imported spare parts. In this connection the experience of the members has been that such spare parts are sold at uncommonly excessive prices.

9. From the information available from the members, it cannot be said that sugar factories are receiving wholly adequate and satisfactory technical assistance. There is no charge of inefficiency or indifference against the existing technical staff. Indeed except the sugar technologist of the Government of India, there is no staff of technical advisors. The factories being large in number and widely spread over the country, problems presented being rather of a peculiar nature, the task is too much for single expert however efficient. My Board, therefore, suggest that at a central place in each province one highly-trained chemist with up-to-date knowledge of the latest improvements effected in the technique of sugar production and one mechanical expert with special experience of sugar machinery should be provided by Government, so that factories may receive timely technical assistance and any abnormal losses may be avoided. In this connection the arrangements in other sugar-producing countries are reported to be far superior and the Tariff Board will please examine comparative methods and recommend measures of improvement, keeping in mind the special conditions of this country.

19. Although it is true that the sugarcane crop in 1936-37 is a record crop on record, it would be an error to infer that all the factories had excessive supply of cane. Cane produce has been excessive in certain areas and otherwise in others. Though restriction should in theory appear to be desirable, in existing conditions, it would be impracticable. Indeed as any scheme of restriction will have to be executed through smaller village officials it might actually operate oppressively upon the agriculturists. It might affect many factories very adversely. Restriction thus is not at all indicated, at any rate in the next few years. The forces of supply and demand can be to a large extent depended upon to induce automatic restriction after a season of low prices and to stimulate increased planting after a period of higher prices, as has been the case in other crops in India and elsewhere.

In order, however, to relieve the pressure of overproduction upon cane-growers, my Board suggest that in years of excessive crops Government should provide small cane-crushing machines or Kolhus to the growers who should also be taught efficient and improved methods of Gur manufacture.

21 and 27. Both from the points of view of the cane-growers and sugar manufacturers, improvement of road and rail transport is exceedingly necessary. Not only is there a scarcity of pucca roads but the existing ones are never in a fit state of repair. Insufficiency of feeder lines has been felt by certain factories. The whole question should be specially considered and the co-operation of the central and local authorities concerned should be sought to improve the situation.

22. (a) For the reasons mentioned in the report of the last Tariff Board, which operate with equal force to-day, my Board do not favour compulsory acquisition or leasing of land by factories. Any such attempt will greatly antagonise the peasants and would be otherwise undesirable. It is understood that in this Presidency, due to pressure of economic causes leases of land were given to certain factories at low rates and it is believed some heart-burning has resulted. But whenever uncultivated Government or

private lands are found in the vicinity of any sugar factories, Government should arrange for the sale or leasing out of such lands.

22. (b) My Board strongly favour the introduction of a zone system adapted to the requirements of each factory. With the fixing of minimum price for cane, there can be no objection from the grower's side. To the manufacturers zoning is calculated to prove beneficial in many respects. It will establish a personal contact and give an understanding of mutual needs between the factory and the cane-grower. It will secure some saving on freight and progressively reduce uneconomic competition for cane. It should make for improvement of the quality of cane and may also operate a check against overproduction. The demarcation of zones should, however, be planned carefully so as to be fair to all factories, particularly in districts where more than one factory are situated in proximity to the same cane area. This should be done annually by a Committee consisting of the representatives of factories, growers and Government with a certain legal sanction behind it.

23. If a satisfactory zoning system comes to be introduced, my Board have every reason to believe that factory-owners will be willing to afford necessary facilities to the cultivators. In the peculiar conditions of India, where proper cane supply has been a difficult problem, zone system offers a promising solution and it will be in their own self-interest to co-operate in making zoning a success.

24. (a) In principle, my Board were inclined in favour of the fixation of quotas. But after careful weighing of its implications, they find that the question bristles with practically insuperable difficulties. The principal object of quota fixation is or must be to save the industry from overproduction and its attendant evils such as have been in evidence during recent months. That object could be achieved only if strict regulation of production were possible, which in its turn would be practicable only in case a definite supply of cane could be assured. In countries like Java where factories have their own plantations, quota-fixing is merely a matter of planning. But in India, as is well-known the situation is quite different. Supposing a maximum quantity is allotted to a factory as its quota for the year and towards the end of the season more cane is offered than required by the quota limit, consequences will be hard to the growers if such cane is rejected. Again, where the quota is too small the factory will be hit. If a large margin of grace is allowed, the whole purpose of the quota system will be defeated, because with a prospect of carry-over of only about 100,000 tons of sugar its prices have reached bottom levels. On the whole, my Board do not see their way clearly to an unexceptionable form of quota fixation.

24. (b) The unrestricted increase of sugar factories is not in public interest and my Board wholly endorse the idea of licensing new factories. Definite rules should be framed under which the grant of license to a new factory may be considered. Government should be vested with discretion to refuse licenses in certain circumstances. The guiding principle should be that unless statistical proof of increased consumption is adduced new factories should be prohibited. It would not be desirable, in my Board's opinion, to prevent completely the extension of existing factories but it should be provided that no such extension may be undertaken without previous permission from Government.

33. At present, rates of freight are different in different Railways. What is greatly necessary is that the rates should be on a uniform basis on all Railways. In connection with the Railway administration there is one very serious complaint. The factories belonging to or under the management of the members of my Chamber are mostly in the United Provinces and Bihar and reports are that it has been impossible to get wagons without some illegitimate satisfaction being given to the Railway staff concerned. Though legal proof is difficult to produce, it is widely alleged that all manner of difficulties is presented, when tired and fed up with such tactics,

the agent of a factory is compelled to accept the demands made. This is a most undesirable state of affairs and the Tariff Board should do something to prevent this evil.

34. My Board urge that rate for lime should be substantially reduced. Similarly as better types of manure are not generally in use, a reduction in freight on manure may stimulate their use with beneficial results.

48. In the opinion of my Board, the basis on which minimum prices for cane are fixed is unsatisfactory. Firstly, experience has shown that it is wrong to base the price of cane on the ruling price of sugar. The correct method should be to calculate the cost of production of cane and add to it a reasonable margin of profit to the canegrower. The minimum price so fixed must, if possible, be the same for all sugar areas. This price should be fixed annually before the season commences and must be maintained to the end of the season and not liable to change from fortnight to fortnight as at present. It would, for some years, except in the event of extraordinary circumstances, have to be the same because the cost of production of cane is not likely to vary. In my Boards' opinion the price should be fixed at 4½ to 5 annas per maund. A machinery should be devised so that it should not be possible to avoid or break down such a minimum price.

61. Molasses are the principal bye-product in sugar manufacture and a huge quantity of about 6 lakhs tons of molasses is turned out by Indian sugar factories every year. Only about half of this quantity is sold and that at very low prices, for consumption in India, the rest of it going utterly waste. Indeed it is not easy even to throw away this unsold quantity of molasses, as by so doing an undesirable nuisance is created around the factories, offending sanitary principles; and therefore some factories are believed to have incurred additional cost in disposing of such molasses in a proper sanitary manner. All this is very unsatisfactory and it is necessary that the technical and other assistance should be made available to the manufacturers in order to make the conversion of this bye-product into commercial value possible. Commercial utilization of molasses is possible in the following principal ways:—

- (1) Manufacture of industrial alcohol from molasses by sugar factories, as a subsidiary industry and institution of legislative measures permitting its manufacture and storage and providing for its compulsory blending and purchase with gasoline or other motor fuel.
- (2) Sale as cattle food by mixing refuse molasses with bagasse powder in a certain proportion (not feasible in India).
- (3) Manufacture of bakelite and other plastics.
- (4) Manufacture of Acetic Acid and Acetone.

Of all these methods the conversion of molasses into power alcohol is probably the easiest and the most widespread in other sugar-producing countries. There, sugar factories have been empowered to install distilleries and legislation has been passed by their Governments providing that all motor fuel must be sold with an admixture of alcohol in a certain proportion. Secondly it has been provided that importers or refineries of gasoline must purchase a certain proportion of alcohol for every 100 units of gasoline. If the Government of India pass suitable legislation on these lines, where-under licences may be issued to sugar factories permitting conversion of molasses into alcohol and its storage and providing for its compulsory blending, etc., most of the surplus molasses can be thus made to add to the national wealth of the country. Until such measures are taken, however, any such possible additional income should not be taken into account in deciding the measure of protection to the industry.

70. As indicated in answer to Q. 33 difficulty has been generally experienced in getting wagons for transport of sugar. Even greater difficulty

has been met with in connection with transport of molasses. The rate of freight on molasses has also been high. As a result of representation made by this Chamber to the Railways concerned, a certain reduction was effected. On the question of adequate wagon facilities one contention of the Railways has been that sugar transport being confined to a part of the year, they cannot spare more than a proportion of the wagons engaged in the whole traffic. This does not promise anything like a more favourable prospect for the future and the Railways should be impressed with the necessity for adequate facilities for a national industry like sugar.

79. In the opinion of my Board 10 per cent. on the capital should be considered as a fair provision of profit to investors, not only because during the years in which most of the factories came into existence, the rates of interest were exceedingly high and debentures were issued at 7 to 8 per cent. but also because most companies have to build reserves against unforeseen risks, for providing labour welfare, etc.

85. In regard to the terms of the present contract there has been a certain amount of dissatisfaction among merchants. Although my Board are not prepared to say that the agitation in this connection has basis in fact to justify itself on; yet, this Chamber believes in the principle that an industry can prosper only with the good-will of all the interests concerned in it and is hopeful that if any reasonable adjustment in the present terms can be made so as to satisfy the merchants without unduly hampering the industry the necessary effort will not be grudged. If the standard contracts widely in operation in textile and other industries are scrutinized, my Board feel confident that comparison will not prove to the moral disadvantage of the sugar industry.

90. Java sugar is still preferred mainly by Europeans and Anglo-Indians and is consumed in hotels or restaurants patronized by Europeans or Indians with Europeanised habits. But slowly even in these fields Indian high class sugar is replacing Java sugar and in the course of time is expected to overcome the prejudice of the abovementioned classes also.

98. While my Board recognise the advantages likely to accrue both to the industry and the merchants from the establishment of "futures" markets, they apprehend dangers which follow in the wake of stimulated speculative activity. Moreover, during the present period of protection, with no possibility of export and the internal consumption being of a known quantity, the danger from a "futures" market will lie in the likelihood of its exercising a depressing pressure on prices which no set of operator, however powerful, can prevent except temporarily. Considering all the pros and cons, my Board are of opinion that it would be premature to start forward markets in India at this stage.

99. The consumption of factory sugar for the period corresponding to the manufacturing season which has just ended is estimated to be about 11 lakhs tons. Besides, it would be reasonable to grant that there should be an annual increase of 20 to 25 thousand tons. Consumption of sugar or of any consumption goods in India, more than in other countries, depends on price. At lower prices consumption increases unexpectedly and at higher levels it shrinks. Besides, due to cheapness and sentimental reasons, Gur provides an alternative which partly restricts the field of expansion for white sugar. All the same, with scientific publicity and propaganda attuned to the psychology of Indian classes and masses, a steady consumption may be maintained with slight increases from year to year.

100. In some parts of the country, sweetmeats for poorer classes are generally prepared with Gur. Otherwise Gur is seldom used in sweetmeats. In the former case as the consideration is that of cheapness, it is doubtful whether sugar will take its place until economic condition of the masses radically improves. Nor is the field so important as to become the object of special efforts for its capture.

103. I give below a table showing the low levels of the price of Java sugar (without duty) c.i.f., Calcutta during 1934:—

Month or Date.	Price. Rs. A. P.
January	3 1 8
February	3 6 1
March	3 5 1
April (up to 24th)	3 5 1
April 25 to May 3	3 3 1½
May 4 to May 10	3 1 9
May 11 to May 28	3 1 3½
May 29 to June 21	2 15 10½
July 9 to July 16	2 15 10½
July 31 to August 9	3 0 4
August 10 to August 20	3 1 3½
August 21 to September 26	3 0 4
September 27 to October 6	2 13 4½
October 7 to October 10	2 12 1
October 11 to October 27	2 13 4½
October 29	2 11 6
November 13	2 9 9
November 14	2 9 3

The above figures speak for themselves. According to the estimates of the last Tariff Board the price of Java sugar landed at Calcutta *ex-duty* should not have been less than Rs. 4 or in special circumstances less than Rs. 3-4 per maund. If Java was sold at much lower levels, the conclusion cannot be resisted that these prices were unremunerative. The lesson of these figures is of great significance and must be borne in mind in considering the measure of protection to be afforded to the sugar industry.

104. The export of Indian sugar by sea has been negligible, being in the neighbourhood of 400 to 500 tons per year. The export by land which was about 40,000 tons in 1930-31 has been on the down-grade, total quantity exported during 1936-37 being only a little over 25,000 tons. In the opinion of my Board, conditions favourable to the export of Indian sugar should be gradually brought about. During the stage of high protection, it is rather doubtful whether Indian sugar can hold its own against Java, Cuba or Hawaii in free competition. It should, however, be in a position to seek market in countries nearer home such as Afghanistan, Nepal, Malaya, etc. If the sugar of the same polarization as sells in England is produced in Indian factories and it is granted colonial preferential status, it will be possible for such sugar to be exported to England, when its price including freight is slightly lower than the price of foreign sugar landed in England.

106 and 107. There are no arrangements for marketing of molasses. Several factories are believed to have thrown the bye-product away for want of a market. Before the emergence of the indigenous sugar industry, molasses were imported from Java to the extent of over a lakh of tons per year. With the progressive increase of molasses production, the imports have ceased. The exports of Indian molasses have been *nil* or negligible. Last year, however, the export of nearly 25,000 tons took place which was distributed between England and South Africa. These two markets seem to offer good room for expansion of Indian exports.

109. My Board are firmly of opinion that the existing measure of protection as secured by the combined effect of the present import and excise duties must be maintained up to March 1946. In this behalf my Board

wish to urge upon the attention of the Tariff Board a few important considerations.

In fixing the measure of protection, the present nominal rate of Java sugar and the ruling rate of Indian sugar cannot be taken as correct guiding factors. Although the ruling price of Indian sugar has appreciated recently by about 3 or 4 annas per maund, yet its present level is uneconomic. It may be that, for a variety of possible reasons, to some factories the return fetched by present prices is perhaps not as great a hardship as to others. Such a favourable position need not necessarily represent the result of greater efficiency or soundness of management. For instance, several factories obtained their supply of sugarcane at very low rates, while other factories paid more reasonable prices. This circumstance alone would mean a difference in cost of about Re. 1 per maund. Similarly other costs may also vary according to circumstances and policy of management. The building and maintaining of reserves for labour welfare and emergencies does not appear to have been governed by a uniform principle. There have been sound and wise as well as opposite policies followed. For these reasons, my Board refrain from analysing and discussing the constituents of sugar costs in India.

However, in coming to the conclusion stated above, my Board have taken into consideration the following among other points:—

- (1) We cannot overlook the fact that Java sugar was in the past sold at prices much lower than the present and there is no reason to think that that experience will not be repeated in future. Therefore the comparison of the fair selling price of Indian sugar should be not with the existing rate of Java sugar but with the lowest rate at which it may be possible for Java to be available in India in future.
- (2) The price which the factories will probably be called upon, in fairness, to pay for the cane may not be less than 4½ to 5 as. per maund.
- (3) A return of 10 per cent. on the capital investment must be provided for.
- (4) Factories will have to incur greater and greater expenditure on publicity and propaganda, research, sales or marketing organisation, etc.
- (5) In addition to the conservative depreciation allowed, factories must take into account the high cost of replacements and repairs.

(27) *Letter, dated the 25th April, 1937, from the Sugar Merchants' Association, Bombay.*

I beg to acknowledge, with thanks, the receipt of your Press Communiqué, dated the 5th April, 1937, and to state that the All-India Sugar Merchants' Conference held at Cawnpore in last November, have passed a resolution to send a representation to the Tariff Board, which is now being prepared. As the Representation is required to be circulated amongst various sugar merchants trading all over India before submitting it to the Board, I think it will take some time in sending it to you. If a questionnaire is yet to be prepared by the Board, we strongly feel that the questions relating to qualities, terms and conditions of sugar contract form and other various difficulties of the trade be added in your questionnaire.

We, the sugar merchants, feel that the present slump in sugar prices is not only due to little overproduction but it is chiefly due to the ruin of the sugar trade during the past twelve months. The main reasons which led to ruin the trade are attributable to bad qualities of sugar and iniquitable terms of contract. Most of the wholesale merchants have partially withdrawn from the market, as nobody is willing to enter into

large forward contracts on account of bad contract terms with the result that the whole burden of the stock will have to be carried by the mills themselves. At present some of the manufacturers are forced to undersell and this has resulted in keen and cut-throat competition among themselves. We intend to explain all these in our representation.

(28) *Letter, dated the 29th June 1937, from the Tariff Board to the Sugar Merchants Association, Bombay.*

I am directed to say that the Board find that for a proper understanding of the sugar marketing problem, they will have to go into the circumstances which led up to the present situation. They would, therefore, be glad of a brief account of sugar marketing arrangements since 1930 with special reference to the transition from imported sugar to Indian made sugar. Any special features of particular years such as the effect of the outbreak and termination of the Abyssinian war may be mentioned.

(29) *Letter, dated the 3rd July, 1937, from the Sugar Merchants' Association, Bombay.*

I beg to thank you for your letter, dated the 29th ultimo and I am pleased to note that the Board intends to go deeper into the Marketing Problem of Sugar.

Before the expansion of Indian Sugar Industry, the wholesale business of sugar was located in ports of Calcutta, Bombay, Karachi, Madras and to some extent Malabar Coast ports. And except Bombay and Karachi, at all other ports only Java Sugar was preferred, while Bombay and Karachi were used to import Java, Continental Beet, British Refined, Russian Beet Sugar and African Sugar. In 1930, Bombay's actual import was 2,125,896 bags, i.e., about 212,500 tons in which 1,943,082 bags were of Java and 182,840 bags were of Beet Sugar. In 1931, Bombay imported 1,966,293 bags say about 196,600 tons in which 1,304,731 bags were of Java and 600,000 bags Russian Beet Sugar, 5,000 bags African Sugar and the balance Hungarian Sugar. In 1932, Bombay imported 1,235,917 bags say about 123,590 tons in which Java was 883,030 bags, Russian 115,678 bags, Polland Beet 77,889 bags, Belgian Beet 24,425 bags, Continental Beet 14,500 bags and German Beet 1,900 bags.

During the above three years, sugar was either imported direct by the members of my Association from exporting countries or bought in Bombay through Foreign Sugar Indenting Houses. Three prominent members of my Association had their own offices in Java while others had agents there. Also our members had agents in London for business of Continental and Russian sugars. The importing business was carried on most economically and the margin of profits in imports was roughly half a per cent. The Importing Houses used to sell to wholesale merchants who are all members of my Association. Wholesale merchants were selling to up-country dealers through local commission agents and brokers. Also there was considerable business of Java Sugar with local speculators. The whole business was carried on in Forward Delivery extending from 6 to 12 months a head. Generally business was done in 3 months delivery in one Lot, i.e., 300 tons Jan.-Feb.-March, every month equal delivery, then April-May-June, July-Aug.-Sept. and Oct.-Nov.-December. Sometimes the members of my Association were carrying a forward business of about 100,000 tons or even more but major part of the above purchase was being resold to up-country and local dealers, speculators and hundreds of small customers. Business being forward and fluctuations being plenty, every contract was transferred at least at an average of 5 parties. Thus in an import of 200,000 tons a year, our members were able to do business five times, means into 1,000,000 tons. And in spite of small margin, profits were good in the long run. Two annas a bag profit was considered a good business and our importers and local dealers were also satisfied by such a profit. Even small distributors were

selling sugar at a profit of not more than 4 annas a bag. All forward business was located only in Java Sugar, because quality is only one and in uniform packing. For every transaction, contracts were made between buyers and sellers, six copies of which are sent herewith. In spite of heavy fall in Java sugar and large fluctuations in prices, we have never experienced a single dispute of quality or contract terms. To sell Java sugar was just like converting a currency Note into Rupees.

In Java, up to 1934, there was a single seller called "V. J. P." Trust in which 90 per cent. of Java Mills were members and 10 per cent. mills were out of Trust. Our Indian Merchants were used to buy in Java from this Trust in wholesale quantity. The delivery in Java is given always at ports in sound condition and this is loaded in vessels and transported to India most economically. The prominent steamship companies were in a Conference and had a fixed rate of freight but most of our members were chartering Tramp Steamers at a lower rate of freight than Conference lines. The sugar is always sold on c.i.f. Indian Ports basis, i.e., the buyer had to pay the Duty and clear from the Docks. Therefore the wholesale Importer had simply to finance the documents from Java to Indian Ports, which the last buyer takes delivery against payment who also pays Duty and exports to interior India. These last buyers are distributing in many stations and in small quantities. Thus the financing of distribution was not difficult. After 1934, all mills in Java are joined and sell through their combination called "Nivas".

From the Import figures, Calcutta will look a major importing Port, while from business point of view, Bombay was the major business port of Java and foreign sugars. Bombay was used to buy large quantities and sell to all ports of Kathiawar, Western India ports, Marmagao, Kochin, Calicut, Tellichery, Ceylon, Aden and Persian Gulf Ports.

Although Java had accumulated large stocks consisting of production from 3 to 4 years still Java never exported a quality lower than No. 25 Dutch Standard and up to now we have not heard a single dispute of quality. Java was most careful in delivering sugar to her exporters. Thus owing to no disputes in quality nor in Contract Terms, wholesale merchants were fully satisfied even with the smallest margin.

After the expansion of Indian Sugar Industry, we (Bombay) began to deal in Indian Sugar also. Our calculation basis of Indian Sugar up to 1935 was from 4 to 8 annas a Cwt. lower than Java Sugar at ports parity and we could sell this Indian Sugar to our various up-country and Local dealers from 4 to 8 annas lower than Java according to quality. The margin of profit in Indian sugar was nearly the same as in Java but as Indian Sugar could not be changed in many hands in forward delivery, such small margin is insufficient to meet overhead charges.

Volume of business in Indian Sugar at Bombay Port began to increase since 1934. However the business was insignificant comparing with Java. We imported 288,264 bags in 1934, 244,860 bags in 1935 and 943,091 bags in 1936. Business of Indian Sugar began to increase at ports after special freights for ports and also due to increase in production.

Up to 1933, production of Indian Sugar was unimportant which was distributed in United Provinces, Bihar, Punjab and Central India through Cawnpore but as the production began to increase, the wholesale merchants of ports like Bombay and Calcutta opened their offices in Cawnpore and began to deal in large quantities and distribute it throughout India. This enlarged Cawnpore Market but the initiative of large volume of business and first in field remained with merchants of ports. Cawnpore market began to move according to the tendency of the merchants at ports. Since 1935, wholesale merchants of Calcutta, Bombay, Cawnpore, Amritsar, Karachi and other centres began to buy large quantities and sell them in Cawnpore and various trade centres directly. Unfortunately all the business of Indian Sugar is located into first-hand buyers and owing to unstandardised qualities

and unjust contract terms no forward second-hand business is possible, therefore the whole risk is to be borne by first-hand wholesale buyers.

There were and there are speculators in sugar as Wheat, Seed and other commodities, therefore whenever there were some exciting news into the market just like War Scare or damage to crops or short crop or any such reason, these speculators and also regular small or big sugar dealers trading throughout India come out as buyers of sugar of Forward Delivery. But on account of Quality and other Contract terms difficulties, such second-hand buyers have withdrawn from Indian Sugar. At the time of Abyssinian War in September 1935, many speculators came out as buyers of sugar but on account of apathy, carelessness and negligence of the Indian Sugar Manufacturers, large business passed into Java and other foreign sugars. We as sugar merchants knew that owing to large crop of Indian Sugar, business in Java and other sugars is harmful but when conditions of Indian Sugar business were impossible then there was no other way but to satisfy such War Scare buyers by foreign sugar.

Attention was drawn of the President of the Indian Sugar Mills Association by me on the 31st January, 1936, six copies of this letter are sent herewith. I am sorry, my letter was acknowledged only in the end of April and this also after my sending copies to all the sugar manufacturers directly and then by the pressure of some of these manufacturers.

The Board will see the negligence and apathy of the Manufacturers who at that time were too proud of their profits and cared for none. On account of European Political situation worsening and Spanish Civil War, there were again War Scares and the Millowners could have taken the advantage of selling their accumulated sugar in forward deliveries through co-operation of wholesale merchants. But they are still the same as they were in 1935. Since 3 months all foreign sugar markets including Java have improved and there are signs of further improvement. In spite of this there are very few forward contracts in Indian Sugar and those who have done have burnt their fingers because of irregular qualities and unjust terms of Contract.

Last season there was a carry-over of about 90,000 tons and this year owing to bigger production there may remain carry-over of about 50,000 tons in spite of heavy consumption. Such a carry-over looking to the volume of sugar business is insignificant. In case of Java Sugar, Indian Merchants were always carrying over a stock of 50,000 to 100,000 tons and this in trade we call invisible stock. With the co-operation of merchants, Indian Sugar manufacturers can well distribute their carry-over in 7 lakhs villages in India and convert the visible stock into invisible.

Unfortunately, the actions of sugar manufacturers are leading to eliminate wholesale Indian Sugar merchants. In 1936, under the unjust contract clauses, various unbusinesslike methods were used, which led to the ruin of trade and losses to the sugar merchants of more than a crore of Rupees and even in six months of 1937, the losses should be further added by Rs. 25,00,000.

Over and above unjust clauses, I will narrate a few unbusinesslike methods of Indian Sugar manufacturers:—

- (1) In 1936, the merchants had entered into very large contracts with the mills. The methods of taking delivery is to send Chalan or despatching instructions to mills for various stations in India. Now suppose "A" (Merchant) bought 10,000 bags from "B" (Mill) and "A" gave Chalan to "B" of 2,000 bags for various stations of Gujarat. "B" (Manufacturer) knows where his sugar is sold and distributed by "A". "B" has also got unsold stock but does not know where to sell. However after knowing the despatching instructions of "A", he sends his travelling Agent in Gujarat, undercuts the Rate and sells in small quantities in Gujarat to those very dealers known from

Chalans of "A". Thus the market of Gujarat is lost to "A" and he has to try and find out other stations to dispose of his balance of 8,000 bags. Now "A" becomes unable to take delivery in time and "B" presses him under the Contract Terms.

- (2) Sugar of irregular qualities is often despatched to outside stations and the merchants have to go into quarrels and losses from his buyers. Surveys are always delayed by the Manufacturers and it is almost impossible to go here and there for Survey in such a vast country.
- (3) Manufacturers do not give sealed samples to the buyers without which second-hand business is impossible.
- (4) No statistics of crop deliveries and balance are available in time, which also hinders second-hand business.
- (5) There is no Terminal Market of Indian Sugar and therefore hedging against stocks is impossible.

By the experience of 1936, most of the wholesale merchants are now buying hand to mouth only and therefore the mills have to carry their stocks. They being ignorant of Sugar trade have now adopted a policy of sending sugar on consignments to sell at ports like Bombay and Calcutta. By this action, almost all wholesale sugar merchants have withdrawn from buying direct from the mills and buy in small quantities from such consignments. Such business give no margin to merchants. Therefore large contracts at a time have now been impossible. This has caused manufacturers nervous and therefore they have undercut the Rates. Such a state of things have brought down ridiculously low prices and it seems, there is no end to it. It is very difficult to explain all such difficulties of trade in such a brief account but I will fully explain orally if the Board will be kind enough to give me time in Bombay. With the Representation of the All-India Sugar Merchants' Conference sent by me, correspondence regarding the trade difficulties is also sent and this must have given some idea to the Board.

As Java and all other foreign sugars were distributed in ports, it was convenient to store stocks at ports while Indian Mills are situated mostly in United Provinces and Bihar and for merchants it is very difficult to store sugar if he wants to. The mills do not give storing facilities and if sometimes given, the merchants generally have to repent because the mills sell off and deliver good sugar in the meantime, and the balance will be given to the merchants whom the storing facilities were given. All these difficulties have ruined the trade and from the present mentality of the manufacturers, I do not see whether the time will come for fair trade.

Unless the manufacturers agree to sell on Indian Sugar Standards and to improve the Contracts and sell only to wholesale merchants as is done in Java, the Sugar trade is doomed and I leave it to the Board to think of the future of the Industry.

(30) *Letter, dated the 28th April, 1937, from the Buyers and Shippers Chamber, Karachi.*

With reference to the Press Communiqué, dated New Delhi the 5th April, 1937, regarding the enquiry by the Tariff Board to ascertain if the protection afforded to the Sugar Industry by the duties imposed by Section 2 of the Sugar Industry Protection Act, 1932, should be continued to the same extent or to a greater or lesser extent during the period from the 31st March, 1938, to the 31st March, 1946, I have the honour to submit my Committee's views in the matter as under:

My Committee, in the first instance, would draw the Tariff Board's attention to the remarkable progress made by the Sugar Industry in India within the last few years of protection—a fact abundantly indicating the country's marvellous aptitude, capacity and power for industrialisation if

Government are ready to lend helping hand in this direction and accord adequate protection to national industries against their foreign rivals. To make a rough estimate of the striking advancement of the Sugar Industry since the grant of protection, it would suffice to say that Sugar Mills in the country have increased in number from 57 to well nigh 150 and that their productions have risen up from 4½ lakhs tons in 1931-32 to 11½ lakhs tons in 1936-37, the latter figure approximating the total annual consumption of sugar in this country. The Sugar Industry thus has supplied the essential need of the entire country in this very important article of their daily diet, and the country is now no longer dependent for supply of this article on foreign countries.

Speaking of the benefits accrued to the country, it is interesting to note that in consequence of the very successful working of the Protection Scheme, a huge sum of Rs. 15 crores representing the prices this country paid every year to foreign countries for the sugar imported in the past, now remains in the country, distributed amongst the factory owners, the employees of the factories, the cultivators who produced cane in increased quantities to meet the demands of the factories, and amongst the transport agencies such as Railways, country cart, motor bus, etc. The impetus the protection has given to the cane cultivation in India can be gauged from the fact that the area under the cultivation has increased from 3,076,000 acres in 1931-32 to 4,431,000 acres in 1936-37; and of the latter, acreage under improved varieties has been 2,800,000 as against similar acreage of 1,170,000 in 1931-32. The average cane production per acre has also increased from 14.1 tons in 1931-32 to 16.5 tons in 1936-37. The factories' demand for cane has increased six to seven times during the course of the six years of protection, and to-day the percentage of cane crushed in factories is over 16.1 per cent. as against 4.1 per cent. in 1931-32. The extended cultivation of cane has also helped considerably Gur manufacture which now require 43,200,000 tons of cane as against 30,873,000 tons in 1931-32. Another additional blessing which the protection to the Sugar Industry has provided is in respect of the relief it has given in regard to the problem of unemployment, by "giving employment to over 2,000 Science graduates, 10,000 educated persons belonging to the middle classes, and to about 2,000,000 skilled and unskilled labourers, to say nothing of over 2 million cultivators of cane".

While there has been abundance of benefits resulting from the protection, it is to the great credit of this industry that it has not cost the general consumer, as was apprehended in some quarters, and that the price of sugar to-day is lower than it was a quarter century ago.

With these remarks as regards the phenomenal growth of the industry under the protection, my Committee would further submit that there still remains a great deal to be done towards making the industry self-sufficient, well-established and strong enough to resist the foreign competing industries without the aid of Government protection. There are great difficulties in its way in obtaining improved cane. There is wastage in form of its by-products like molasses for which there is no economic use. Its cane crushing season requires to be extended from 4 months to about 8 months to be in line with the advanced industries of other countries. The average percentage of recovery of sugar from cane in factories in India is much lower than that in Java and other foreign countries. There are several other imperfections also; which all can only be removed by extensive research work necessitating heavy expenditure. Because of these imperfections, the cost of production of Indian sugar remains at a higher figure than that of the products of Java and other countries whose industries have attained scientific protection. It is therefore the bounden duty of Government to carry out the necessary research work and adopt other suitable measures with a view to decreasing the cost of production of sugar and to enable the industry to work to its full potential strength.

The question of marketing of Indian sugar should also engage Government's most serious attention. The Indian Sugar Mills should be enabled

and asked to manufacture standard qualities which could be acceptable for any sugar contract for these particular qualities, irrespective of their being made by one particular mill or the other. This is of paramount importance in the Sugar trade, and the Mills in their present stage of development can be safely asked to comply with this requirement. It is evident that no trade could flourish under hundreds of different qualities which is presently the case with Indian sugar, and for stabilisation and prosperity of Indian Sugar trade all emphasis on standardisation of quality should be laid, and for continuing the protection this should be one of the conditions to be placed with the Millers.

If the trade is stabilised, naturally it would not allow any considerable downward movement of prices and ultimately it would help to the stabilisation of the industry itself. In the past two years merchants have suffered heavy losses mostly owing to the lack of any quality standard with the Mills, and a cut-throat competition between the factories to dispose of, impatiently, their products; and if such a state of affairs continues, whatever little interest has been left with the traders with respect to Indian sugar will vanish in no time, with ultimate harm to the industry itself. So far as special qualities are concerned, a way can be found by granting certain premiums over standard qualities for their tender. In this connection it would be advantageous to quote the following Resolution passed at the First All-India Sugar Merchants' Conference, on 30th November and 1st December, 1936:—

“This Conference strongly recommends the Indian Mills to standardise their qualities, keeping in view the Indian Sugar Standards, and to minimise the number of qualities as far as possible, so as to avoid disputes and rehabilitate confidence in Indian sugar, in the interests of all concerned”.

and the following further Resolution passed at the Fourth Annual General Meeting of the Indian Sugar Mills Association held at Calcutta on 19th August 1936:—

“In order to meet the competition from foreign sugar and as far as possible to minimise marketing difficulties, this Association recommends to its members the necessity for improving the quality of sugar produced and for maintaining a uniform standard of such quality throughout the season”.

Another point to be emphasised is that something should be done so that Indian sugars attain a keeping quality to enable their storing for a long period specially during the monsoons and hot season. Java and other foreign sugars have this merit while Indian sugars generally get stained during monsoon. This factor also has caused considerable losses to the sugar traders during the last two years. Something should be done for remedying this lacking in Indian sugar.

Now that the Sugar Industry is able to produce in excess of the country's requirements, surplus stocks of sugar are bound to accumulate, and it is therefore of vital importance that Government should find an outlet for same in foreign markets, specially in the United Kingdom which is depending to a large extent on imported sugar from non-Empire countries. In my Committee's opinion, if therefore an adequate preference duty were granted, it would be possible for India to depend upon the United Kingdom market as an outlet for its surplus production.

Cheap transport plays a very important part in the satisfactory marketing of any produce or manufacture. So far as sugar trade is concerned, my Committee urge that for ports specially, the railway freight on sugar of different indigenous mills should be almost equal and that internally also the freight on this commodity should be as low as possible. Further, for the proper development of the Indian sugar trade, it is also very desirable that there should be standard contract terms for sugar, and the Government should invite representatives of Mills and the Trade at a

Conference to determine such standard contract terms; for the full value of the protection can only be had if there is close co-operation between the manufacturers and the traders, and all possible help, besides protection, is afforded to the trade and industry by Government.

My Committee, however, are greatly apprehensive of the attitude of Government towards this national industry which is next in importance to the Cotton Textile Industry of the country. Government in their anxiety to enhance revenue have recently increased excise duty on sugar from Re. 1-5 per cwt. to Rs. 2 per cwt., little minding about the adverse effects such enhancement would have on the agriculturist, the manufacturer and the general consumer. In my Committee's opinion, the imposition of excise duty on sugar is inconsistent with the Government's declared policy of according adequate protection to the national industry. As the Tariff Board would agree, half-hearted protection is bound to nullify the benefit and would act as a great handicap in the proper and natural development of the industry under protection. Now that the industry has shown so much progress, and is still in need of a greater help in many respects, Government should continue the existing degree of protection without any reservation and take other suitable measures to afford the further required help to the industry, in the betterment of the country at large. It is true that Government revenue from the importation of foreign sugar has almost disappeared, but that is what was expected and desired by admission of the principle of extending protection to the sugar industry. In my Committee's opinion, the loss of revenue to Government has been amply compensated by the manifold benefits enumerated above resulted from the development of the sugar industry, and the Government, therefore, should be satisfied with the most satisfactory working of the protection principle in the case of this industry which has already done immense good to the country and which with the extended protection is bound to make India the greatest producing and exporting country, of finest quality sugar, which is the objective of all concerned. My Committee, therefore, urge that excise duty on sugar be entirely removed to enable the industry to stand on its own legs with least possible delay.

It is earnestly hoped that my Committee's above views will be taken into due consideration by the Tariff Board.

(31) *Letter, dated the 2nd July, 1937, from the Buyers and Shippers Chamber, Karachi.*

With reference to your letter No. 173, dated the 11th May, 1937, I am directed by the Committee of my Chamber to reply to some of the questions of the General Questionnaire, as under.

By-products.

60 & 61. Referring to Questions 60 and 61 about the disposal of molasses, it would be necessary to point out that the question of disposal of molasses is one which is engaging the attention of all concerned with the Sugar Industry.

In India, unfortunately there are few factories, manufacturing Liquors, Wines and Spirits, and these factories are mostly equipped with plants which are using only gur molasses as their raw material for the production of spirits. Thus these factories consume a very small part of the molasses that is produced by the Sugar Factories. The freight charges are so very heavy that except for the few sugar factories that are located near wine distilleries, other factories are obliged to store away their molasses which could not be put into any use, and the sugar factories are finding it very difficult to dispose of the same, and in many cases the storage of it is also very difficult.

Molasses could be utilised to a very great advantage and use if the Excise Authorities are prepared to give permission to manufacture rectified

spirit out of same. With the possibility of manufacturing 3½ gallons of rectified spirit out of every maund of molasses, there is a great scope of making large amounts of money from molasses which at present is going to waste.

In India, there is a very great demand for Methylated spirit, which for the present is mostly imported from Java, and thus the manufacturers in that country find a good market for the disposal of their production of rectified spirit.

In India the same imported spirit is being used for domestic purposes. Methylated spirit is the basic raw material for Paints, Varnishes, Polishes and Lacquer industries also. There are various important uses to which rectified spirit could be put, if there is a sufficient supply of the same available. Rectified spirit is the main product on which the Aromatic Chemical Industry depends, as its basic raw material. There is a great possibility for the use of industrial alcohol for running motor cars, and already in countries like Germany industrial alcohol is being used for the same purpose as a substitute for petrol.

In spite of the repeated cries of the Sugar manufacturers to grant them permission to manufacture spirit out of molasses, no attention has been paid to the same by the Excise Department. This should prove to be a great national loss, as this subsidiary industry alone would prove a bounty to the Sugar manufacturers; besides, it would provide an additional income to the Excise Department, and also would save a great deal of money of the consumers of rectified spirit and methylated spirit imported from other countries, on freight, duty, etc.

The question of providing cheap fuel for motor cars would also be solved, if this question of the disposal of molasses is tackled properly. It would be both in the interest of the Government and the manufacturers if the necessary facilities are granted to manufacturers of spirit out of molasses; which is easy as the Excise Department is already having control of the sugar factories to some extent, and the same staff could keep control over the rectified spirit distilleries plant attached to the sugar factories.

This is the only way of solving the problem of the disposal of molasses.

Marketing.

83. The principal Sugar Marketing Centres in India are:—

Cawnpore, Calcutta, Bombay, Karachi, Amritsar, Ahmedabad, Baroda, Broach, Bhavnagar, Rajkot, Cochin, Tuticorin, Cocanada, Vizagapatam, Hyderabad, Sukkur, Shikarpur, etc.

84. The present arrangements in the sale of sugar are as under:—

The Millers are the manufacturers and they appoint sole selling agents of their sugar at the principal centres such as Cawnpore, Calcutta, Bombay, etc.

The dealers of sugar in the principal centres buy sugar from these sole selling agents and supply goods to all consuming places by giving Chalan or orders to the sole selling agents. The sole selling agents forward these Chalan to the Mills for execution.

In the current season, owing to the depression in the market and unforeseen losses sustained by big dealers at Cawnpore, Bombay, Calcutta and other principal centres, the dealers were naturally not inclined or willing to do any substantial business in sugar; with the result that several of the Mills have opened their agencies or sale depôts at the principal centres, and from there they supply the goods to small dealers at various stations. In other words, the Millers have been, for sake of the disposal of their goods, directly dealing with small centres, and as such the influence of big dealers has weakened.

Big dealers supply the goods to retailers on credit system, which facility is not being given by the Mills, though agents of the Mills or the Depôts

of the Mills on their own responsibility may give such facility of credit to retailers to some extent.

85. The present Sugar Contract Form of the Mills is, on the face of it, one-sided, looking only to the interests of the Manufacturers. Another Contract Form has recently been introduced by the All-India Sugar Merchants' Conference, which claims to be in the interests of both the Buyers and the Sellers, but this latter form, to the information of my Chamber, has not yet been accepted by Indian Sugar Mills.

The Committee of the Chamber would suggest that once the principle of a standard Contract Form is accepted, the matter may be referred to a Committee representing both the sides, viz., Millers and All-India Sugar Merchants' Conference, and the Contract recommended by this Committee should be taken as the Standard Contract. My Committee would here mention that some years back in respect of foreign sugar business each importing firm at this port had their own contract form, and the terms of such contracts varied very largely, and the transactions were made on the Office Dhara system. This had created abnormal difficulty and lengthy litigations for a number of years specially when there was a big rise or fall in the market. So far as Karachi market was concerned, the Chamber through their Sugar Committee took up this matter, and was able to introduce a Standard Form of Contract acceptable to importing firms. Another contract form was also introduced for use of the current market. Only two importing firms had then their own contract forms. Although the forms introduced by the Chamber were not satisfactory being one-sided in arbitration matters in favour of the foreign sellers, yet in all other respects they worked satisfactorily and avoided the litigation. However, in recent years the foreign sugar trade has been reduced to the minimum, but the example has shown that a standard contract form for sugar business is very essential in the interests of all parties concerned.

86. There is very little or no difference between wholesale and retail prices, that is to say, between prices for 5,000 bags and 5 bags. My Committee are supplying here figures of 2 years, but the rest can be had from the Director, Imperial Institute of Sugar Technology, Cawnpore:—

	Per cwt.					
	Rs. A. P.			Rs. A. P.		
1935-36—						
Java whites	12	15	0	to	14	7 6
British Refined	13	0	9	to	14	8 0
Motipur AA	13	3	6	to	14	1 0
Motipur AAl	12	14	0			
Lohat, Sakri	12	14	0	to	14	1 0
Marhowrah	13	2	0	to	14	5 0
Champaran						
1936-37—						
Java whites	13	4	0	to	12	15 6
British Refined	13	5	6	to	13	4 9
British Refined (March 1937)	13	7	9	to	13	12 0
Motipur AAl	12	12	0	to	10	8 0
Babhnan	13	2	0	to	11	14 0
Balrampur	13	1	0	to	11	14 0
Champaran	12	15	0	to	11	15 0
Lohat	12	6	6	to	11	1 0
Hathna	12	14	0	to	10	10 0
Hargaon	12	0	0	to	11	1 0

87. Generally the difference between wholesale and retail price of sugar is As. 1 to As. 2 per maund. Fluctuations occur when the balance of sugar is depleted due to late arrivals of the consignments. Fluctuations also depend upon the tendency of the market as also the position in which millers offer their product for ready or forward business.

88. The dealers in Karachi have their own storing arrangements. Sugar is stored in pucca built godowns. It is complained that Mills in the United Provinces and Bihar which produce most of the sugar do not have up-to-date storing arrangements. Their storing arrangements are poor compared to those of manufacturers in foreign countries, such as Java, etc.

Deterioration, sweating, etc., of sugar takes place in hot season in case of "kutchra" sugar, *i.e.*, sugar not properly manufactured. The deterioration begins in April generally. In case of the sugar of certain Mills which have taken proper care, the deterioration takes place in the rainy season. Java sugar does not get bad with the change of climate, and when it does, the percentage of deterioration is very meagre. Indian sugar deteriorates more rapidly than the imported sugar as the millers leave a good percentage of molasses and are manufacturing in great haste.

89. The early deterioration of the quality is the principal factor due to which big dealers have been put to considerable losses. It is generally believed that Mills cared very little about the quality of sugar to meet big contracts made by them at high prices, there being no fixed standard qualities. The Committee of the Chamber are emphatically of opinion that it is now high time that the quality should be standardised as in the case of Java sugar, and all sugar factories enjoying the protection must be required to produce standard qualities, which is the first and foremost need of the present times.

It has been reported that improvement of quality has been effected by certain mills and the sugars of these mills are generally of a keeping quality.

90. British refined sugar is preferred to Indian sugar in the manufacturing of biscuits, sweets, peppermints, etc. Europeans prefer British and Java sugar to Indian sugar.

91. Qualities manufactured by certain Mills, such as, Pachrukhi Special, Bulland, Baza Sugar, Marora, Motipur, Deori on Sone, Partappur, etc., are as good as Java sugar, and they deteriorate less than other sugars, but such sugars form only 15 to 20 per cent. of the entire production in India. The remaining productions require improvement in more or less degree. The Tariff Board should thoroughly enquire from the factory owners about to quality of their sugar, and wherever the defects are found, full investigation should be made with a view to improvement of the quality. The special attention of the Tariff Board is invited to this question. The Committee feel that where there is lack of expert service as the cause of the inferior quality, the Board should suggest remedies. Advice of the Research Committee should be had on all necessary occasions. In my Committee's opinion, as mentioned above, two reasons can be attributed generally for the inferior quality, *viz.*, (1) leaving of more percentage of molasses in the manufacture of sugar, and (2) the haste in which huge quantities are produced by the millers to meet the contracts already made by them. The question is of paramount importance, and the Mills should be compelled to manufacture least Indian Sugar Standard 25 C. The "dana" or grain must be uniform and dust should not be allowed to mix with it. Indian sugar of ordinary kinds is inferior in colour and its "dana" or grain is the smallest which cannot face climatic changes.

92. The sugar manufacturing season lasts for about six months. At the end of the crushing season the stocks are carried by the manufacturers. The advantage of banking facilities is taken by certain few Mills, banks advancing moneys on the stock to the extent of 60 to 70 per cent.

93. My Committee feel that the marketing survey of sugar is necessary with a view to make Indian sugar within easy reach of every place in India, and with a view to find the export market.

94 & 95. Before dealing with Question 94, it would be necessary to thoroughly consider Question 95. The standardisation of Indian sugar is absolutely necessary, and the idea of the establishment of the Central India Selling Organisation would be feasible only when the sugar products in India are standardised. For the standardisation of Indian sugar, Java qualities should be the example. The number of qualities should be reduced as far as possible, and there should be only two or three qualities to be produced by all the Mills. As for white sugar, standard 25 D. C. is the proper standard, and for brown sugar the standard should be 18 to 20 D. C. as is in vogue for Java sugar.

96. Negligible business has been done on Indian Sugar Standard just because Mills have not adopted these.

97. The usefulness of the standards can be increased by compelling the mills to manufacture Indian Sugar Standards, and by lowering the price of Indian Sugar Standard set.

98. The establishment of "terminal" markets depends upon standard products only. When the qualities are standardised, the trade would demand such markets at the principal centres.

As regards "futures" markets, attention is invited to such existing cotton and wheat market where forward business is done. In such transactions a negligible percentage is actually taken or granted delivery of, and in most of the transactions, profit and loss on clearance basis is being made. It is a question whether such "futures" markets benefit any of the parties, viz., manufacturers or the consumers. However, as suggested above, "terminal" markets at important centres will be necessary.

99. The statistics of the increased production go to show that the country has been able to meet the demand of home consumption. Improvement of quality would naturally bring Indian sugar in favour of foreign markets. What my Committee beg to point out is that there is considerable raw material in the country and that there is a great scope for extra production which would have to be exported to foreign countries. A thorough enquiry should be made as to how this country can supply sugar to foreign countries and compete with foreign sugar successfully in the nearest foreign markets, such as, Burma, Ceylon, Persian Gulf, Red Sea Ports, etc. Great Britain imports considerable quantities of Java sugar not only for consumption but also for refining same and exporting to other countries. Although for want of proper representation of India at the last International Sugar Conference, India has been excluded from exporting Sugar to foreign countries, it is the duty of Government of India to take all necessary measures for preparing this country for mass production of sugar for supply to the nearest countries and get the above mentioned restrictions removed. Government should further take steps to abolish altogether or reduce the excise duty on sugar, get preference for Indian sugar in the markets of the United Kingdom and the Colonial Empire, and allow rebate on exports of Indian sugar to foreign countries as on the lines of the rebate scheme for exports of wheat from Karachi to foreign countries. All these measures are very essential for the proper development of the Indian Sugar Industry.

100. Gur is consumed by the poor and is not used in the manufacture of sweetmeats.

101. In all European countries, including Italy, Germany, and the United States of America, where fruit is canned or preserved, sugar is the chief raw material that is of basic importance to this industry. Sugar is largely used for preservation of fruits, for making jams, jellies, and also for making fruit syrups, etc. In all such countries, the sugar that is being used is supplied to these manufacturers free of all imports and excise duty, if any, imposed on the same. This is the main factor, which is the basis of such industries, as without such a help, this industry is not possible to flourish in the most advanced countries of the world.

In India, there is a very great possibility of the development of the subsidiary industry like canning and preservation of fruits, manufacture of fruit juices and syrups, but this is impossible in the face of the heavy duties imposed on sugar which is the main raw material for these subsidiary industries.

It should be recommended to the Government to grant licences to the manufacturing concerns, permitting the use of the free-of-import-duty sugar for the above industry, as is done in the case of rectified spirit for the use of medicinal preparations. If this condition is fulfilled, then alone it would be possible to develop this industry, as without such help, it is not possible to compete with other countries who are granted such condition for the development of their industry.

102. My Committee give below the c.i.f. quotations:—

		Per cwt.	
		Rs. A. P.	Rs. A. P.
1931-32—			
Continental D/bag	. . . . .	5 4 2	to 6 0 6
Do. S/bag	. . . . .	5 4 3	to 5 9 3
Java Whites	. . . . .	5 3 7	to 6 1 2
British Refined	. . . . .	5 3 9	to 5 10 2
1932-33—			
Continental D/bag	. . . . .	4 10 2	to 5 0 9
Do. S/bag	. . . . .	4 10 2	
Java Whites	. . . . .	3 6 10½	to 4 11 0
British Refined	. . . . .	4 12 8	to 5 6 1
1933-34—			
Continental D/bag	. . . . .	5 5 2	to 4 4 1½
Java Whites	. . . . .	5 2 8	to 4 1 6
British Refined	. . . . .	5 0 6	to 4 14 6
1934-35—			
Java Whites	. . . . .	3 15 6	to 3 12 0
American Granulated (this was not imported)	. . . . .	5 0 6	to 4 4 0
1935-36—			
Continental S/bag	. . . . .	4 2 7	
Java Whites	. . . . .	3 14 0	to 5 1 6
British Refined	. . . . .	4 7 6	to 3 14 5
1936-37—			
Java Whites	. . . . .	4 4 0	

Import Duty—Rs. 9-1 per cwt. throughout.

Landing charges—As. 2 per cwt.

103. Since the end of 1935, there has been no parity of Java sugar in the Indian market just because Indian sugar is cheaper than imported sugar because of the protection.

104. Coastal exports of Indian sugar have taken place but not the foreign exports. As already stated elsewhere in these replies, there is a very good home market, and the possibilities of capturing foreign markets for Indian sugar are very great provided the Government afforded the facilities and adopted measures as mentioned in the reply to Question 100, etc.

105. The effect of the sugar excise duty of 1934 and the addition made in 1937 has been harmful to all concerned, viz., the manufacturer, the

consumer and the agriculturist, the last-named class particularly suffering most heavily.

106 & 107. Please see replies to Questions 60 and 61.

It is hoped that my Committee's above views will be taken into due consideration by the Tariff Board.

(32) *Extract from letter, dated the 2nd August, 1937, from the Buyers and Shippers Chamber, Karachi.*

1. I am to enclose herewith a copy of representation made by my Chamber to the Divisional Superintendent, North Western Railway, Karachi, regarding the Railway's unsatisfactory storing arrangements for sugar arriving here by rail from producing centres. It should be noted that in the past Karachi was one of the biggest sugar despatching centres, sugar being imported from foreign ports, and therefore satisfactory arrangements are existing for the landing and storing of sugar in the paved godowns of the Port Trust and of the despatching Bunder Station. The position of the foreign trade in sugar has however entirely changed, and now Indian sugar is received by rail in considerable quantities from up-country, but the arrangements for unloading and storing of sugar at the Station are not satisfactory. My Committee therefore have addressed a letter to the local Railway, as stated above, and I am to request that you will kindly take this point into consideration while making your recommendations for this port.

2. Another point my Committee beg to place before your Board is regarding the free period allowed by the Railway for the removal of sugar. This Chamber has received information from Calcutta merchants that they get 3 days free period for removal of sugar from the railway premises, while at Karachi the free period allowed is only 36 hours. It is therefore necessary that besides the facility of paved godowns with sheds, the free period at Karachi should also be extended in order to bring this City-port in line with Calcutta.

Enclosure.

Copy of letter No. R 2/27, dated the 20th July, 1937, from the Honorary Secretary, the Buyers and Shippers' Chamber, Karachi, to the Divisional Superintendent, North Western Railway, Karachi.

I am directed by the Committee of the Chamber to address you as under:—

You are probably aware of the fact that bookings of sugar from Karachi by the Bunder Station have of late been reduced; and instead, there are arrivals of Indian sugar by rail. This will be seen when reference is made to the following statistics:—

	Approximately. Bags.
Sugar booked from up-country and arrived at Karachi (from April, 1936, to March, 1937) .	213,889
Sugar booked from Karachi (from April, 1936, to March, 1937)—	
Keamari	49,480
Bunder Station	93,070

There are adequate facilities for storing the goods when they are sent for despatch to up-country, but as there was no arrival of sugar before, the platform or the floor of the shed where sugar arrived from up-country is landed is not paved as in the case of booking station with the result that

sugar from the torn bags gets mixed up with dust and mud. Further, the bags of sugar in rainy season and hot days get damaged. I am, therefore, to request that arrangements be kindly made to land the consignments of sugar in covered sheds the floor of which is paved with cement.

(33) *Extract of Minutes of the Committee meeting of the Coimbatore Indian Chamber of Commerce held on Thursday the 18th March, 1937.*

* * * *

3. The Committee of this Chamber emphatically protests against the proposed increase in sugar excise duty which is detrimental to the industry and is of opinion that the Government should have at least allowed the industry to consolidate its position till the Sugar Tariff Board had submitted its recommendations.

* * * *

(34) *Letter, dated the 19th June, 1937, from the Sugarcane Growers' Association, Valavanur.*

I herewith send you my reply to your questionnaire regarding Sugar Industry by Tariff Board, and I request that I may be allowed an opportunity of explaining further my memorandum in person before the Board at the time of examination of witnesses. I request due intimation to be given to me so that I may offer my oral evidence to supplement this memorandum.

Enclosure.

ANSWERS TO THE GENERAL QUESTIONNAIRE.

Raw materials.

10. I cultivate sugarcane myself; I own lands some of which I cultivate and some of which I lease out. Sugarcane being a garden crop I prefer cultivating it and giving my best attention. Lessees are not capable first, of investing the necessary capital expenses and they have no interest in the continuous fertility of the land being conserved. They come and go and would waste the land. Hence personal farm cultivation is far better.

11. (a) Total area of land—50 acres.

(b) Average area of land under cane—5 acres.

(c) Varieties of cane are—(i) Fiji B, (ii) Co. 2, (iii) P.O.J.

(d) Rotation once in five years; less interval does not grow healthy canes.

(e) Average yield per acre for—

(i) Fiji B—25 tons.

(ii) Co. 2—30 tons.

(iii) P.O.J.—30 tons.

Sucrose content is a matter beyond the knowledge of the ryot and is kept as secret by factories. Since we sell the cane at so many rupees per ton and as we have no control over the factories in the matter of knowing the sucrose content of each variety we are left to guess the same which we estimate to about 10 to 11 per cent.

(f) Cost of cultivation is about Rs. 300 per acre as detailed below:—

	Rs.
Ploughing and banking	8
Cost of seedlings—15,000 tops at Rs. 2 per thousand .	30
Weeding at least half a dozen times at the rate of Rs. 2-8 per time	15
Manure—1st dressing—4 candies of ground-nut oil cake	60
3 bags of ammonia	12
Coolies for spreading and mixing the above manure and cake in the soil	3
Manure—2nd dressing—4 candies of ground-nut oil cake	75
Sugarcane being a one-year crop irrigation for the whole year is necessary—	
For the first six months March to August each month five irrigation—Total 30 irrigations . . .	60
September to February 3 irrigations per month— Total 18 irrigations	35
This sums up the cost of cultivation and rearing up the plants up to the stage of cutting . . . about	300
	per acre.

Thereafter cutting expenses and carting to the factory alone remains. Of course the cost of carting depends on the distance between land and factory; but on an average we can put the cutting expenses at Rs. 10 per acre, and carting by Rail or Road about Rs. 35. By Rail it will cost an addition, loading and unloading charges of roughly Rs. 5. So the cost of cutting and carriage to the factory is Rs. 50. So the total expenses amounts to Rs. 350 per acre.

Experiments.

12. As a rule ryots do not carry on experiments. Some Cane Growers' Societies, however, have recently taken up experiments on the strength of allotments from the excise duty which the Government have promised. We have got a Sugarcane Growers' Association for the last six years and I have set a small farm of one acre wherein I am experimenting with the two varieties Co. 2 and P.O.J. and comparing their growth and yield. In a few months I will be able to compare and contrast their growth expenses, etc., and I will then publish the same. Though I had applied a year back for a grant from the excise allotment to the Local Government nothing have yet come up. In this connection I must inform the Tariff Board that the beneficent intentions of the Government in proclaiming that from out of the sugar excise duty allotments will be given to help sugarcane research and investigation, have so far remained unfulfilled in this province at any rate. The Tariff Board have to see that the allotments from sugar excise duty are given to all *bonâ fide* Cane Growers' Associations so that research work may be carried on by them.

Seed and Free Distribution.

(b) The factory at Nellikuppam have got their own farms from where they distribute seedlings occasionally, but not freely and they charge the rate according to the demand and supply.

13. There is a Government Farm in neighbourhood at Palur maintained at a considerable cost but the benefits to the general public are not as good as it might be expected. Being in the midst of the sugarcane area of the district it might do more original work in cane varieties and do

more demonstrations to help the ryots. In fact, the Coimbatore Farm in sugarcane might be repeated in a smaller scale in the Palur Farm to the great advantage of cane growing ryots in the district. The Agricultural department are asked to develop this side of their activities hereafter.

14. The quantity of cane available has grown large in the last seven years by nearly doubling itself. There has been only one factory for the last 30 years at Nellikuppam and its normal requirements for the four months of working period is about 4,000 acres or 100,000 tons of cane. Within the last seven years the area has nearly doubled itself and to-day the factory has got 8,000 acres of cane from this and surrounding districts. The establishment of an additional factory will certainly ease the situation and minimise the inconveniences to the cane-growers and enable them to cut the cane at their proper time. At present the rush of cane at the factory during the cutting season is so great that the ryots have to wait long for days and weeks before a cutting order is available. In this connection I have to inform the Board, that the present factory at Nellikuppam will have to double their capacity or the Government will have to help the floating of another concern to deal with the extra quantity of cane grown in this locality. The climate and the quality of the soil and the abundance of sub-soil water supply in South Arcot district are also good, and they make a very good combination for the growth of sugarcane in the area. Given proper facilities for growing and cutting, the district can easily grow 15 to 20 thousand acres of sugarcane and the advantages of the agriculturists by such an expansion are obvious. No doubt the total All-India production of sugar has reached a very high level and I am aware that there are suggestions even to restrict the further expansion of sugarcane cultivation. But I must point out that the Interprovincial distribution of the total number of factories is the most important *desideratum*. The bulking of majorities of factories in the United Provinces is a great handicap to the other provinces and it is neither efficient nor economical. In any event Madras Presidency has got a number of sugarcane growing districts where more can be easily grown and more factories established to cope with them. This will make for the more even development of cane over the several provinces and both economically and climatically Madras Presidency will have to expand in this direction and I would press this aspect of the problem for the close and careful consideration of the Tariff Board.

15. Every variety deteriorates with the course of time. In fact the Fiji which was introduced from Java ten years ago has much deteriorated now and to-day it is not the favourite of the ryots. Fresh and later varieties are always more yielding and eagerly sought after. And to-day Co. 2 and P.O.J. hold the field. Perhaps even they will lose their vitality in course of a few years, and newer strength will have to be sought after. Similarly in the case of ground-nuts old country seeds became useless and we had to import the Mozambique and other varieties and then came the Sanegar from South Africa. Even among sugarcane age seems to tell on the varieties and one has always to provide for a diminishing return on this account in every successive years and it behoves the Government therefore to always be prepared for a decreasing yield of crop per acre.

In addition damage by disease and insect-pest are always common and they are inherent in any cultivation. In sugarcane especially there has crept in an insect recently and they attack the plant even from the 5th month. Insects begin to multiply on the leaves and almost suck the vitality of the plant. The plant becomes famished and yellow and its growth becomes stunted thereafter. In the end the resultant total tonnage is much reduced sometimes even going below 20 tons an acre which means a loss of 20 per cent. On an average for each year you have always to allow for a margin of 20 per cent. for this waste. In addition during the monsoon months of October and November when the canes are high and fully grown the high winds and rain break the standing canes and they are considerably damaged. A lot of them fall to the ground broken or

bent and no contrivance to prop them up are successful. In the result we lose about 10 per cent. in our crops and this a normal feature in our area. The Tariff Board will have to advise the Agriculture Department as to how to rectify this.

17. Conditions in South India are quite different from Northern India regarding competition. In the south almost invariably there is only one factory for a big area and hence no competition.

18. Variations in cane area. These depend mainly upon the price for sugarcane which the factories pay. No doubt the price of jaggery is good and it really tends to increase the acreage. Prices for alternative fat crops like ground-nut have a bearing on acreage; for *e.g.*, during the last three years when the price of ground-nut has risen some ryots prefer the ground-nuts to sugarcane in dry lands.

19. Though the production of sugar is in 1936-37 highest on record still the distribution of the factories must be made more even and the congregation of hundreds of factories in the same province must be discouraged (*vide* my answer to Question 14).

20. Cost of cultivation (*vide* answer to Question 11).

21. Difficulties of cane-growers. The fixing of a minimum price for sugarcane is an absolute necessity. In the last seven years the factories have been reducing their rates from Rs. 16 per ton to Rs. 13-8 per ton. To-day for Fiji B and so on for others, *i.e.*, 16 per cent. of reduction. Under one pretext or other factories are always eager to cut down the prices for raw materials and cane-growers are not yet sufficiently organised to demand their own terms. In any scheme of protection to the sugar industry the Tariff Board must see that the cane-grower is given the cost of his cultivation *plus* a decent margin for his profits. This alone will ensure a steady area under cane cultivation and to-day the prices paid to the cane-growers are almost the minimum possible for the growers' requirements. Any further cut in the prices will only drive the grower out of job and the factories will be killing the goose that lays the golden egg. No doubt the factories are not making as much profit as they used to, but they must be content with a diminishing profit in the face of the present day conditions. The Tariff Board must calculate to the minutest details the cost of manufacture and allow the factories a reasonable profit on their capital and management. And any percentage over 10 annas return for manufacture of capital will be obviously a handicap for the present day conditions of capital seeking industry. If as the balance of some of the companies prove 30 to 40 per cent. of profits, they are as a result in very many cases of a large protection which is really a handicap to the consumers and must be deprecated. The interest of the consumers as a whole have also to be borne in mind and any extra burden placed on him with a view to developing the industries must be the minimum and only for a temporary period. If at the end of another seven years the price of Indian sugar should be still disproportionately high as it is at present compared with the world price, protection is not worth having.

22 & 23. The Zone system is certainly advantageous where there are more factories than one. Each factory will have to draw cane from its own Zone and not compete with others, and pay for the cane at a rate to be fixed by the Government for each variety.

42. Payments for cane must be made immediately after weighment, in any event not later than a week. At present there is an abnormal delay of a month or two between delivery and payment which must be reduced.

By-products.

58. The utilisation of by-products is a necessity and any increase to the factories' profits by this means is certainly desirable as that will also help the cane-growers indirectly by making available a portion of these profits by fixing the price of cane.

68, 69 & 89. The quality of sugar deteriorates with long storage and even as between factories the qualities vary. Northern Indian sugar have already got a bad name in the Madras market as they don't keep well, while Java and Parry's sugar have got a better reputation.

91. Indian sugar is certainly not equal to Java's. The inferiority of Indian sugar is obvious even within the first month of storage. Moisture in the sugar makes it unwholesome. Production of first class quality should be insisted upon in Indian factories.

Claim for Protection.

108 & 109. In any scheme of protection the Tariff Board will have to see that a diminishing scale is adopted which will automatically expire after certain time and allow things to take their own natural course. A permanent protection for all the time is out of question and it is of utmost importance that the Tariff Board should devise a scheme of protection on a decreasing scale from year to year and which must at the end of the period allow normal conditions to operate. I would suggest that for the remaining period of protection, 1st April, 1936, to 31st March, 1946, a schedule be adopted beginning with Rs. 6 per cwt. and decreasing by one rupee per year and ending with the withdrawal of all protection in the last year.

(35) *Letter, dated the 30th April, 1937, from the Southern India Chamber of Commerce, Madras.*

SUGAR INDUSTRY—YOUR NOTIFICATION OF 5TH APRIL, 1937.

I have pleasure to enclose six copies of the Memorandum containing the views of my Committee on the question of protection to the Indian Sugar Industry.

Enclosure.

MEMORANDUM SUBMITTED TO THE INDIAN TARIFF BOARD.

The protective duty laid down after the last Tariff Board Enquiry and the subsequent revenue sur-charge of 25 per cent. on customs duties have substantially helped the industry. The number of mills has increased; production has increased; import has declined; and there has been a sufficient degree of internal competition to bring down the prices in the market. Mills have also been generally able to reduce cost of production write-off depreciation, build up reserves and improve their financial strength. The improvement in those directions would have been much more pronounced had the Government not come down on the infant industry with a heavy excise duty.

My Committee desire the Board and Government to note that it is unsound in principle for the Government to handle, during the interval of two successive enquiries into the conditions of an industry by the Tariff Board, the fate of an industry in a manner independent of the last recommendations of the Tariff Board. The levy of an excise duty in this particular case, my Committee are aware, was defended on the ground that the industry has been receiving an adventitious help from the revenue sur-charge on the customs duty. Nevertheless it is known that the industry's expectations were upset by the excise duty, and new mills found themselves in difficulties. From the point of view of the consumer also the excise duty must be condemned. The Indian consumer is proverbially poor and if he submits uncomplainingly to a protective duty it is done only in the larger interests of the country and it is his expectation that his burden will be lifted the moment the industry gains strength of its own. Government are therefore doing a great wrong to him by not giving him

the relief which the industry may be deemed to be in a position to give at any stage. My Committee therefore feel that Government should be advised to remove the excise duty at the earliest possible moment.

As regards the import duty that may be fixed for the next period of protection my Committee feel that the industry has yet much leeway to make, by way of evolving better strains of cane, improving the size of the grain, reducing the cost of production, using the by-products, building up reserves, writing down the fixed assets and so on. It cannot be said until such experiments shall be successfully completed that the industry is out of danger. And a time must shortly come when this country with such a large sugarcane area under cultivation, would have to look to foreign markets for export to keep the industry going. On the other hand, the industry would not be in a position to face the competitive conditions in the world markets unless during this period of experimentation it entrenches itself more strongly and builds up its productive and financial strength. In the circumstances my Committee suggest that the Board would be well-advised in recommending the continuance of an effective protection to the industry to the extent of Rs. 7-4 per cwt. My Committee confidently hope that relief to the consumer would come in the natural course by the force of internal competition which is already operative in a large measure.

(36) *Letter, dated the 20th August, 1937, from the Andhra Chamber of Commerce, Ltd., 99, Armenian Street, George Town, Madras.*

THE INDIAN SUGAR INDUSTRY.

The Andhra Chamber of Commerce would like to bring the following matters to the kind notice of the Tariff Board:—

This Chamber would like to stress that there is scope for small factories in the Northern Districts, of the Madras Presidency, though as a rule it believes only in the economic future and vitality of big units of production. When sugarcane is available only in scattered parts of a district, such small factories would seem to be the only possibility, but if the adjacent market is already controlled by the products of bigger and distant factories, suitable adjustment of Railway rates is called for; otherwise such small factories would come to grief. It seems to us that the low freights quoted by Railways for sugar produced in the United Provinces has adversely affected the markets for Madras factories. A marketing Board for Sugar produced in South India alone coupled with the introduction of a bandage rate per mile, instead of the present flat rate, would seem to be called for at this juncture. In the opinion of this Chamber zoning of factories should be thought of only when either co-operative societies of cane-growers already exist or when minimum prices have already been introduced for different types of cane. We are not against the introduction of such a system altogether. But what we are anxious is that the Board should recommend (1) that the power of creating zones, in favour of factories, be vested in the Provincial Government; and (2) that if factories should grant assistance to cultivators in the form of seed, manure, etc., the evils of the struck system should be prevented; where co-operative societies do not exist, Government supervision of such arrangements between cane-grower and factory may be recommended.

In the case of the Northern Districts, the essential preliminary to the starting of new factories would seem to be the construction of wells in dry tracts. In order to prevent the formation of monopolies on the one hand, and unhealthy competition on the other, we are in favour of licensing of Factories being undertaken by the Provincial Government. Protection would be wasted, if there is the final collapse of uneconomic, as well as many economic units of production. It seems to us, that the transport of cane to the factory, is more closely bound with the expansion of road services and development of village means of communication, than with the

construction of railways in future. The main obstacle to such road services lies in the bad state of such roads as exist. We would suggest (1) that licenses to fresh road services should be granted only if local bodies are prepared to allocate such revenue for the repair of existing roads, and (2) in order to lessen the injury to roads, local bodies should license only those carts which are fitted with pneumatic tyres.

In North India, the price of sugarcane, varies between the beginning and end of the season between 5 annas to 8 annas per maund, on an average. The market for cane is, however, not so free in the Madras districts. Here factories and commission agents fix the price nearly a year before. In the Circars, the commission agents, dealing in jaggery, are effectively influencing the price of the cane. Factories and commission agents deduct the principal and interest amounts due to them. There is a feeling amongst many ryots that the tounage basis on which different varieties of cane are purchased by the factory at different prices do not afford stimulus to cultivate better types of cane with higher sucrose content must be recommended by the Board. The State cannot divest itself of responsibility as to the conduct of a protected industry so far-reaching in its scope, so largely affected by the State fiscal policy. However individual its growth might have been, it is now a great employer of labour, a great field of investment. Possibly the recent rise in the price of Java sugar might have been manipulated in order to weaken the case for protection to the Indian Sugar Industry. Premature withdrawal of protection might have disastrous consequences on the several industries connected with the sugar industry. We would suggest however that in case, sugar factories are not agreeable to the grant of fair minimum prices, the rates of import duties may be reduced for the remaining period of protection. It is unfortunate that with the stabilised protection, the growers have not moved in the direction of co-operation. The fair price for sugarcane must be based on a sliding scale and the sliding scale must be framed with reference to the price of sugar.

(37) *Letter, dated the 3rd August, 1937, from the Mysore Chamber of Commerce, Bangalore.*

I am desired to submit herewith, for the kind information of the Board, the Memorandum containing the views of this chamber on the continuance of Protection to the Indian Sugar Industry.

Enclosure.

MEMORANDUM SUBMITTED BY THE MYSORE CHAMBER OF COMMERCE, BANGALORE,
TO THE INDIAN TARIFF BOARD.

1. Protection was granted to the Sugar Industry in India in April, 1932. Since that date the industry has made considerable progress and amply justified the policy of protection.

2. The sugar Mills have increased from 57 in 1932-33 to about 150 in 1936-37. The total production of sugar has risen from 478,119 tons in 1931-32 to 1,150,000 tons in 1936-37, while the import of sugar has fallen from 511,319 tons in 1931-32 to 28,000 tons in 1936-37.

3. The total area under sugarcane has also gone up from 3,076,000 acres in 1931-32 to 4,431,000 acres in 1936-37, while the area under improved varieties of cane has spread from 1,170,478 in 1931-32 to 2,800,000 in 1936-37. There has also been an increase in the average of production of cane per acre. It has increased from 14.1 tons in 1931-32 to 16.5 in 1936-37.

4. In spite of the starting of a large number of mills, only 16.1 per cent. of cane is crushed in the factories and a very large percentage is still used for the manufacture of gur. The production of gur is four times that of sugar.

5. India is to-day the largest sugar-producing country in the world. The present annual consumption of sugar in the whole of India is estimated

to be about 10½ lakhs of tons and there is therefore no need to import sugar from foreign countries except sugar of special qualities on a small scale.

6. The benefits that have accrued to the country from protection are considerable. India used to import every year sugar valued at Rs. 16 crores. This huge sum of money now remains in India and is distributed among the cultivators, factory workers, transport agencies and as return on capital invested. The area under cane has increased *pari passu* and the cultivator has been able to secure a better price for his cane. The industry has provided employment to about 2,000 science graduates, 10,000 other educated men, and 2,000,000 skilled and unskilled workers. Besides there are 20 million cultivators of cane in the country. The industry has also provided profitable investment to indigenous capital to the extent of Rs. 30 crores. All these benefits have accrued to the country without increasing the burden on the consumers. We have it on the testimony of Mr. M. P. Gandhi that the net cost to the consumer is lower to-day than what it was a quarter of a century ago and that we are selling sugar cheaper to-day than the rate visualised by the Tariff Board at the end of the period of protection of 15 years, i.e., in 1946.

7. The Indian Sugar Industry is just entering on its second period of development. It is evident it has made noteworthy progress, India to-day being practically independent of foreign supplies of sugar. What the industry is in urgent need of now is consolidation and stabilisation of its position so that it may become independent of State Protection and attain a position which would enable it to successfully compete with foreign sugar producing centres. During this period of consolidation and stabilisation, the industry undoubtedly require adequate protection.

8. There are certain drawbacks which require *immediate attention*. Among these are:—

- (a) The supply of and cultivation under improved varieties of sugar-cane should be increased. The cane crushing season has to be extended from 4 to 8 months, as in Java and other sugar-producing centres;
- (b) The average percentage recovery of sugar from cane in India is much lower than in Java and other countries and the Indian sugar factories have to increase their efficiency further in the direction;
- (c) The cost of production is also much higher in India than in Java and other countries;
- (d) There is much wastage of by-products, like molasses for which proper economic uses have not yet been found;
- (e) Indian sugars lack keeping quality, and during monsoons and hot seasons they get stained and they cannot therefore be stored for long periods;
- (f) The industry further suffers from the lack of cheap transport facilities;
- (g) In order to facilitate marketing of sugar there is need for standardisation of quality as well as standardisation of contract terms;
- (h) Research should be supported on adequate lines; and
- (i) The imposition of heavy excise duty has affected the industry adversely and may arrest its further growth

This last drawback requires first attention, if the industry is not to be impeded in its development on sound lines. During this period of development when the industry has to build up its productive and financial strength, it is not only necessary that production should be continued but also that the excise duty should be removed.

9. The Managing Committee of the Mysore Chamber of Commerce, therefore, recommend the continuance of effective protection to the sugar industry to the extent of Rs. 7-4 per cwt. and urge strongly the removal of the heavy excise duty.

(38) *Letter, dated the 9th July, 1937, from the Indian Chamber of Commerce, Cochin.*

With reference to the Tariff Resolution No. 127-T. (1)/37 of the Government of India in the Department of Commerce, regarding the amount of protection afforded to the sugar industry by the duties imposed by section 2 of the Sugar Industry Protection Act of 1932, I have the honour to inform you that in the opinion of my Chamber the existing protection should be continued in the best interest of the industry even after 31st March, 1938.

Replies received from the Cultivators of Sugarcane.

(1) *Letter, dated the 23rd June, 1937, from Mr. Sanat Kumar Roy, Dighapatia Raj, Dayarampur, Rajshahi.*

With reference to the office Memo. No. 592--96-S./2, dated the 4th June, 1937, of the Agricultural Chemist, Bengal, I have the honour to submit herewith six copies of replies to the General Questionnaire issued by the Tariff Board from the point of view of a cane-grower as I have a big sugarcane farm but not from the standpoint of a factory owner because I have no factory as defined by Sugar (Excise Duty) Act, 1934.

Enclosure.

10. Yes we undertake cultivation of sugarcane. Some portion of land were purchased outright and some were Khas lands in my zamindari.

	Acres.
11. (a) 1933-34	253
1934-35	444
1935-36	500
1936-37	657
	Acres.
(b) 1933-34	116
1934-35	203
1935-36	272
1936-37	328

(c) Coimbatore 213.

(d) Cultivation under our own supervision proper. We do not leave any land under fallow. Four years rotation is followed in which sugarcane remains for two years and other crops including at least one green manuring crop, one leguminous crop and one fodder crop are taken:—

- (i) Green manuring with Dhaincha and sunhemp.
- (ii) Cow-dung compost.
- (iii) Neem cake we are now experimenting with chemical fertilizers like sulphate of ammonia.
- (iv) Sulphate of Potash.
- (v) Niciphos.
- (vi) Double Superphosphates.

	Mds.	Srs.
(e) 1933-34	510	20
1934-35	300	0
1935-36	589	26
1936-37	368	16

(f) Cost of cultivation per acre :—

Year.	Tillage.	Insect pest.	Trench.	Applica- tion of manure.	Plant- ing.	Hoeing Weed- ing.	Plough- ing for Weed- ing.	Earth- ing.	Trash- ing.	Harvest- ing.	Cutt- ings.	Cost of manure.	Total.
	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.
1933-34.	5 9 3	—	17 10 9	3 3 9	7 14 9	0 13 6	—	3 12 0	3 13 6	24 0 0	10 5 9	15 0 0	92 3 3
1934-35.	6 15 0	0 14 3	0 6 0	2 13 0	6 8 3	5 15 3	—	0 10 6	10 11 3	24 2 3	13 12 0	5 4 0	67 14 9
1935-36.	6 5 3	0 0 6	0 3 3	2 14 6	8 1 0	6 6 0	1 8 9	1 5 0	—	23 10 9	13 8 9	11 4 0	66 11 3
1936-37.	6 6 9	0 14 6	0 11 3	0 13 6	5 10 0	2 8 6	—	0 6 9	3 9 0	16 10 3	14 10 0	2 0 10	61 12 6

12. We tried some experiment with S. 48 canes in a small scale but were not successful. We are now trying experiments with P.O.J. 2878 in a small scale.

(b) We used to sell cuttings before to the cultivators by instalment system of payment but now cane cultivation having spread widely in our locality this practice is not now necessary.

13. The help of Agriculture Department was sought in a few instances only.

15. We are not much experienced about frost here, so we are not in a position to say whether Co. 213 sugarcane gets damaged by heavy frost; also we are not experienced in *colletotricum falcatum* but sugarcane smut (*Ustilago Sacchari*) did a good deal of damage to the crop. Insect pest such as top borers, stem borers and white ants cause great damage to the canes, we also noticed a kind of beetle which cuts off tender shoots of cane. Samples of such beetle was sent to Agriculture Department for their opinion but they thought that beetles generally can hardly be expected to do such damage. A kind of Rhyncotus insects settle early on the leaves in the rains and suck their juice causing the leaves to sear and thus do a great deal of damage to canes in the rainy season. Unfortunately we kept no statistics of the extent of damages done by the above pest.

21. The main difficulties of the cane-growers in general, may be enumerated as follows:

- (i) Lack of irrigation facilities.
- (ii) Difficulty in obtaining good land suitable for cane cultivation as one big holding.
- (iii) Big cane-growers have to depend on the migratory labour for their tillage operations and that frequently leads to difficulties.
- (iv) Want of sufficient capital to purchase good implements, manures, etc., and to carry on all the operations satisfactorily.
- (v) Want of good marketing organisation for selling the produce in the forms of raw canes, gur/jaggery and khandsari sugar so as to enable the cultivators to get a remunerative price.
- (vi) Lack of demonstration by the Agriculture Department. As regards ourselves we obtained several leaflets containing advice for growing sugarcane and other crops from the Agriculture Department.

During delivery to the local mills, the following difficulties were faced:—

- (i) In procuring adequate conveyances for carrying canes.
- (ii) Unsatisfactory condition of roads and bridges does not allow any other type of conveyances such as pneumatic-tyred carts or motor trucks except country carts.
- (iii) Then the difficulty at the factory weighbridge. Due to insufficient number of well-manned weighbridges maintained by the factory a good deal of scuffling goes on to reach the fore-front for early weighment. Thus accidents to carters and animals are not rarities. Sometimes the carts are detained for more than 24 hours, thus causing naturally great inconvenience to the cultivators.
- (iv) Another great difficulty is that the number of local mills being limited to two, only the prices of canes offered by them are gradually going down. The mills authorities allege that owing to sugar tax they have been obliged to lower the prices of canes. Another cause for low rates for sugarcane is, as the mills authorities allege, the lowness of market price of sugar while they have to pay a sugar tax in addition.

27. Owing to paucity of mills in this locality this question does not arise. No, not adequate. Very unsatisfactory.

28. Average eight miles in this locality. Roughly 24 hours. We have not kept any statistics.

29. About 2 to 3 pies per mile per maund in this locality. Generally they have to hire country carts.

(2) *Answers to the questionnaire of the Tariff Board regarding raw materials submitted by B. Indradeo Pandey of Village Puraina, P. O. Jogapatti, District Champaran, Bihar.*

1. (a) Yes.

(b) I cultivate sugarcane in my own "kasht" land.

(c) Does not arise.

2. (a) About 35 bighas.

(b) Average 5 bighas each year including khutti (Ratoon).

(c) Co. 213 mostly.

(d) I keep fallow the land in which I intend cultivating cane. I use *Gober* as manure and I cultivate cane in rotation in different plots.

(e) Average 300 maunds per acre.

(f) Cost of cultivation per acre:—

	Rs.	A.
Ploughing	5	3
Harrowing	2	0
Manure	6	0
Cartage for manure	3	0
Labour charge for spreading manure	1	0
Seed at As. 4-9 per maund (1 katta=3½ maunds)	13	2
Labour engaged for sowing	1	2
Weeding and Ryding	5	0
Cartage for carrying cane to weighbridge	18	12
Scraping of cane at the time of harvesting	2	0
Interest on advance taken by cultivator	10	11
Rent	3	0
Supervision	5	0
Watching charge	2	0
	78	3

4. We have not made any experiment of early and late variety of cane and we have no knowledge whether any Agriculture Officer is responsible for our assistance in the matter.

6. Our cane crops are liable to damage from pest, disease and insect to an extent of 25 per cent. of total production.

8. Competition among factories does not help in the least in increase of price of sugarcane as the rate is fixed by the Government from time to time. Of course cane at even lower rate is sold by needy cultivators. But when there was scarcity of cane in the past the cultivators used to get even higher rate for their cane towards the closing of the crushing season.

10. Yes, cultivation of cane should be regulated according to demand.

11. As for cost of production see answer to Question 2 (f). As for outturn, 300 maunds of cane is produced from 1 acre, price of which will be Rs. 70-5 at the rate of As. 5 per maund, As. 3-9 per average maund.

N.B.—This outturn will be corrected taking the circumstances of the season 1936-37 and in case of ryot whose total cane has been sold.

Cultivators do not get money for cost of cultivation in time. There is no systematic arrangements for supply of manure in *Dehats*. There is nobody to instruct the cultivators to grow suitable variety of cane in their fields. So far there is adequate arrangement for delivery of cane to the factory in the interest of the cultivators. Contract with the ryot by execution of *Satta* is one-sided. Ryots execute *Sattas* and become bound to supply the specified amount of cane to the Mills or their contractors but the mill-maliks or their contractors do not bind themselves by any deed for purchase of the cane of the ryots. In my locality specially ryots have to pay bribes to the employees of Parsa and Harpur concerns, they being contractors and shareholders of the Lauria Sugar Mills for execution of *Sattas*. Without bribe no *Satta* can be executed and the ryots do not find themselves in a position to sell off their cane at the time of harvesting. In this locality many of the Parsa and Harpur employees get *Farzi Sattas* executed in the names of their relations and servants for exaggerated amount of cane which they cannot in any way supply and to make up the deficit they purchase cane of those poor ryots at lower rate who are not allowed *Sattas* and they are debarred from enjoying the full advantages of Government control in regulated price of cane. Besides these several other underhand means are applied by the factory employees to exploit the cane cultivators. These facts can be brought to lime-light by making confidential enquiry by any responsible Government Officer. If these illegal methods will be left to continue in this Elaka, the poor ryots will have no salvation.

In order to overcome these difficulties Cane Growers' Co-operative Societies may be organized in this Elaka and by starting Cane Marketing Union the ryots may be helped in disposal of their cane without any difficulty or trouble.

13. (a) Recommendations of the previous Tariff Board seem to be right.

(b) Zone system will not be advantageous in the interest of the ryots.

14. Does not arise.

20. (a) One pie per maund per mile.

(b) Some cultivators carry cane in their own carts but majority of them have to use hired carts for which they have to pay at the above-quoted rate.

22. Cartsmen have to pay Municipal Tax at the rate of Re. 1-13 half-yearly. Cane is supplied on bullock carts at Rampur weighbridge of Lauria Mills and from there it is transported by rail of the factory. Cane is also supplied at the mill-gate weighbridge. The normal period of detention at Rampur is 3 to 4 hours and at the mill-gate weighbridge is 5 to 6 hours. So far as the gate supply is concerned no complaint is to be recorded.

23. From the Rampur weighbridge to the Lauria Mills is 9 miles. It takes about 24 hours between cutting of cane and its delivery at factory. Yes, the railway arrangements for transport are quite satisfactory.

37. Yes.

39. The basis on which minimum prices are fixed is far from satisfactory. Price of cane should be fixed by the true representatives of ryots elected by them on democratic lines.

40. The rate of cane should be fixed in such a way that the question of payment of bonus may not arise.

42. Cultivators may be advised to cultivate canes of early, medium and late varieties and crushing season should be spread from November to June.

43. No. The Agriculture Department should transfer the services of the Overseers in the hands of the Cane Growers' Co-operative Societies Department so that their services may be utilized in the best interest of ryots.

(3) *Replies to questionnaires furnished by Mr. Israil Haque, Bihar.*

10. Yes, undertake cultivation. Myself a cane-grower. Did not purchase any land specially for sugarcane cultivation but grow it on my raiyati jote lands existing from before.

11. (a) The area held is about 100 acres.

(b) About 10 acres.

(c) Coimbatore.

(d) Ordinary method of cultivation.

(e) & (f) 300 maunds per acre yield. Rs. 20 per acre cost of cultivation. One anna per maund carriage hire to mill. About 35 maunds gur in one acre. Seedlings 30 to 40 maunds per acre. For three years one sowing will do but the 3rd year crop is rejected by mill as deficient in sucrose.

12. (a) & (b) Concerns mills.

13. Agriculture Department supplies seeds when asked for.

14. (a) Larger area has been under cane cultivation every year and larger amount of cane available.

(b) The quality of cane is all the same. No distinction is made by the mill as regards quality of cane.

15. No frost. There is considerable damage by disease and insects pest and damage by jackals and rats from the time of cultivation till harvesting.

Loss average 10 per cent.

16. More than sufficient supply from cane-growers' point of view.

Coimbatore.

17. For mills.

18. (a) No.

(b) No.

(1) Much depends on rainfall where there is no arrangement for irrigation. If there is no rain after sowing, there is failure of crop.

(2) Concerns mill.

(3) In former years price of gur varied from Rs. 2 to Rs. 3 per maund while this year Rs. 1-8 to Rs. 2 but afterwards it fell to Re. 1 to Rs. 1-8.

(4) No alternative cash crop is obtainable as the field cannot ordinarily be cleared.

19. Yes. It was much more than the demands by the mills. Making of gur was difficult and the price fetched by gur was not sufficient to meet the cost of making gur.

Yes, restrictions are necessary.

20. Same reply as 11.

21. (1) Irrigation in case of failure of rain.

(2) Protection from wild animals.

(3) The difficulty of getting manure.

Delivery to the mill.

This is the main difficulty. The main issue purjis which are very difficult to obtain. It is at the disposal of jamadars who distribute purjis under the Inspectors according to their whims and other matters which it is not proper to disclose. Many complaints were made and they came up before the Advisory Board and through the Government Sugarcane Inspectors but the Board has no authority to check it.

The delay in taking delivery.

Weights.—This is also one of the main grievances. The Government Inspectors have tried their utmost but it cannot be said that there

is no more abuse. The mill people at their weighbridges are not free from abuses.

Suggestions.—The grievance of the cane-growers can easily be removed if the Headman of the villages may be entrusted with purjis to distribute among cultivators of their own village.

22. (a) No compulsory acquisition or leasing of land is necessary. On the other hand it will be harmful to cane-growers. Mills can get sufficient sugarcane from the cane-growers.

(b) Zone system is injurious to the cane-growers and then they will be at the mercy of the factory.

23. Concerns mills.

24. I am in favour of (b) (i) and (ii) because the cane-growers will be much benefited as cane grown by them will be taken by the factories in larger quantities.

25. Concerns mills.

26. Average weight of cane carried by a country cart is 12 to 14 maunds but factories insist that it should not be more than 12 maunds. Rubber-tired carts are not possible in this area.

27. Not sufficient.

Condition of main and feeder roads is very bad in this area specially when there is rain and in the month of November when flood water does not fully dry up.

28. Up to 6 or 7 miles.

2 to 3 days.

No protection.

29. Some cane-growers bring cane on their own carts, otherwise they hire.

Average cost of hiring within 5 miles is one anna per maund and exceeding that 1 anna 3 pies to 1 anna 6 pies for the distance.

30. Where there is no free ferry the growers have to pay the ferry tolls to bring the carts to the factory and no other toll is paid by them.

31. (1) The carts come regularly and the supply is continuous except on pay days.

(2) Detention of about 12 hours. There have been double weighbridges, even that is not sufficient.

32-38. Concern mills.

39. No arrangement with cane-growers except distribution of purjis mentioned above. No advance or help is given.

40. For mill.

41. Cane taken from cane-growing societies this year. They are not paid anything.

42. Weighments are made at the weighbridges. Payments are made on a particular day in the week. It is made within a week from the delivery.

43. The price is paid in controlled areas according to the rate fixed by Government. No variation unless sanctioned by Government.

44. Government considers the price of sugar in determining the price per maund of sugarcane and it is not varied unless the Government sanctions in controlled area.

45. For mills. Question does not arise as the price is fixed by Government.

46. Yes, there has been a variation this year. Price varied as stated before. The cause is excess supply of gur than the demand.

47. For mills.

48. Not fully satisfactory. Very small margin of profit is left to the cane-growers. The prices should be fixed after considering the cost of cultivation and carriage to the factory.

49 & 50. For mills.

51. It will be very beneficial to cane-growers if both varieties are introduced. In that case the cultivator will get ample time for supplying the cane.

52. Benefited to some extent by these departments.

53-89. For mills.

90. Generally the Indian sugar is preferred locally by all people. Some prefer Java sugar only for making tea.

91-99. For mills.

100. No appreciable replacing. Because in sweetmeat trade sugar only is used.

101. In sweetmeat sugar is only used but in other places machinery is necessary. Hence no immediate prospect of starting such industries.

102-104. For mills.

105. Sugar excise duty of 1934 was borne without much complaint but the additional excise duty of 1937 has told very heavily on sugar business, and consequently the cane-growers are also to suffer.

106 & 107. For mills.

108. Unless there was protection, the foreign sugar, specially Java sugar, would have flooded the market and the price would have been much lower than the Indian sugar, and the Sugar Industry in India would have been nowhere.

109. The protection must be there, otherwise the Indian Sugar Industry will be at stake. The present rate if not more should be kept, till the remaining period from April, 1938, to March, 1946, otherwise foreign sugar, specially Java sugar, will be undersold, for which the cost of protection is much less than the Indian sugar.

110. Reducing the excise duty will be very much beneficial to the industry as the price of sugar will be lower and then there will be some more margin of profit to the cane-growers as the factories will be able to give fair price for the cane purchased.

111. The effect of import duty on molasses has been beneficial to the sugar industry inasmuch as the by-product molasses will be sold cheaper and therefore the sale will be larger and the mills will get a better profit which will also be beneficial to the cane-growers.

(4) *Replies furnished by Mr. Jayant Prasad Sahi, Zamindar, Muzaffarpur, Bihar.*

1. Yes, I do in my Zirat land.

2. (a) 40 bighas.

(b) 4 to 5 bighas.

(c) 213, 285, 210 and 331.

(d) 3 years before we were keeping land fallow for the cultivation. But now we have abandoned keeping land fallow even in monsoon. Now we are introducing to sow cane with tobacco or chillies. After cutting the first crop of tobacco the second crop of tobacco or donji is cut and ploughed in the standing cane crop and earthed up. So only it takes 8 months for the cane crop. The result is quite good and satisfactory.

(e) 213—600 maunds, 285—400 maunds (now abandoned as the mill is not willing to take that cane). 210—is also abandoned (as it does not pay in ratoon crop and mills also object to take it). 331 is too late crop. Hence very few grow it.

(f) Rs. 60 to 80 or even sometimes 100 according to the application of manure. For the details separate list is attached.

3. (a) We are making experiments with sugarcane since 20 years. But after the introduction of Coimbatore varieties, I have put this year only 2 varieties, 213 and 331, side by side one acre each (2 acres only).

4. We have tried with the late and early varieties and come to the conclusion that only 213 is suitable for the small growers with good outturn. About the manuring we use cow-dung, castor-cake, rape-cake and super-phosphate only and sanai also.

Very little. They only supply sometimes seeds of sanai or veet.

5. (a) It has gone higher in our locality 25,000 maunds to 300,000 maunds.

(b) All those other varieties which were grown in the locality have been abandoned and 213 has taken those places and is giving a very good outturn in some fields up to 1,800 maunds per acre with the minimum labour.

6. In our locality top-borer is doing mischief but if at the time of cultivation the seed is well selected it does less harm.

8. Sometimes before this year the price had gone high up to 7½ annas although the Government price was 4½ annas.

9. (B) (1) With one or two rainfalls in the month of May in unirrigated areas the outturn goes 50 per cent. higher.

(2) Prices for sugar in the local bazar was Rs. 8 to Rs. 10 per maund in 1935. In 1936 it was Rs. 10 to Rs. 8. This year Rs. 8 to Rs. 6.

(3) In 1935—Rs. 5 to Rs. 3-8, 1936—Rs. 5 to Rs. 3-8, 1937—Rs. 3 to Re. 1.

(4) The alternative crop tobacco and chillies; price depends upon the market, so we are not able to give the correct figure.

10. This year was an exceptionally good year for sugarcane. And there is no sugar mill within 28 miles. So sugarcane must be grown in a limited quantity.

11. In the area where the cane is grown without irrigation the cost of cultivation with manure is Rs. 60 per acre. But where it is grown with the help of irrigation the cost of the cultivation is nearly 50 per cent. more. The average outturn in the unirrigated area is 600 maunds and in the irrigated areas 800 maunds. For the details of cost please see the separate list.

12. The main difficulty in the cultivation of sugarcane is of manuring as it is not found in sufficient quantity in the locality. The second difficulty is about its disposal. The castor-cake and other cheap manures we keep in the locality.

13. (B) The zoning system is fatal to the cultivators as by the zoning system whatever surplus cane of that locality could not be sent or sold to another factory would remain solely on the mercy of the zone master.

14. Generally the cultivators do not want advances in large scale. It harms them heavily than the help given to them by the factory or by the contractors.

15. For the benefit of the cultivators some factory is to be opened where there is no factory within 25 miles.

20. The average cost by cart up to 4 miles is ½ anna per maund, up to 6 miles ¾ anna per maund and above one anna per maund.

Ocasionally the cultivators employ their own carts.

21. Sometimes District Board peons extort some money from the cart-men.

24. It is very difficult for the growers to send their cane by rail if the factory is at a long distance. The fare per maund should be introduced

in the Railways up to 100 miles making the prices of gate cane and rail cane equal.

37. Yes. '

39. No, the price should be fixed different from the gate cane and Railway cane. Gate cane must be paid more than the Rail cane as there is no extra expense in the gate cane as all the charges, even to throw the cane into the feeder, are done by the cart-men.

40. We are not in favour of cultivation of different varieties of cane as it does not pay to the cultivators.

42. By introducing the late variety the crushing season may be prolonged and the early working may be substituted by the ratoon cane of 213.

43. We are not satisfied whatever assistance is given by the Agricultural Research except the supply of seed of 213. The Co-operative Department are bogus working in our places. The Agricultural staffs are so meagre that they can't help the cultivators in the right time. Some more "Kamdars" should be appointed to help the growers specially in sowing the sugarcane in rows. Manures should be put in some associations for supply to the growers.

Cost of cultivation per acre [Answers 2 (f) and 11].

	Per acre.
	Rs. A.
(1) Four ploughing September-October	2 0
(2) Deep kodaying 10" to 12"	8 0
(3) Cost of cow-dung (22 cartloads)	27 8
(4) Powdering and spreading manure	2 0
(5) Ploughing and pulverising and mixing manure	8 0
(6) Drawing furrows by bullocks	0 8
(7) Cutting sugarcane and carrying it to the spot (50 maunds)	1 0
(8) Putting castor-cake, fine cow-dung and cane setts into ditches	1 8
(9) Cost of 4 maunds of castor-cake	6 0
(10) Cost of rape-cake and ashes and expenses in besmearing sugarcane cuttings with rape-cake solution and ashes	2 0
(11) Cost of filling ditches with kodali and Huga	2 8
(12) Two weeding and forking	2 0
(13) Earthing up with ridging plough	0 8
(14) Cost of seeds (50 maunds)	15 8
(15) Rent of land	10 0
(16) Miscellaneous	1 0
Total	85 0
(17) If irrigation becomes necessary every time it costs Rs. 7 together with forking (3 irriga- tions essential)	21 0

(5) Letter, dated the 24th June, 1937, from Babu Harbans Narayan Sinha, Member, Tirhat Divisional Sugarcane Advisory Committee, Bihar.

I have the honour to append hereto my replies to the general questionaire issued by the Board in connection with an enquiry regarding the

extent of protection required by the Indian Sugar Industry during the period from the 31st of March, 1938, to the 31st of March, 1948.

PRODUCTION OF SUGAR.

Raw Materials.

10. I undertake cultivation of sugarcane. I possess my own ancestral lands. Also I possess about 60 acres of new lands which were purchased by me along with a Zemindari. The following difficulties are experienced in purchasing and leasing suitable lands:—

(1) High prices.

(2) It is difficult to get lands in compact areas.

11. (a) I hold 300 acres.

(b) Average area of land under cane each year is:—50 acres.

(c) Varieties of cane grown:—213 and 214.

(d) I adopt trench planting system of cultivation and put cow-dung and farm yard manure in the trenches. Cane is cultivated in rotation of other crops in three years. I keep the land fallow for 12 months before actual sowing of cane.

(e) Average yield for Co. 213 is 300 maunds per acre.

(f) The following is the cost of cultivation per acre:—

	Rs.
Ploughing with country ploughs	10
Trench cutting	7
Manuring	15
Sowing and dressing the trenches	2
Earthing	2
Seeds with carting	15
Rent	10
Cutting and cleaning cane for delivery to the Mills or for crushing	4
Spading and taking out cane roots after cane is cut	4
	<hr/> 69 <hr/>

NOTE.—Sugarcane very much exhausts the fields and the land which produces cane will produce very poor crop during the following year which is another loss to the cultivators.

13. The Agriculture Department of my Province have introduced early varieties 214 (now abandoned) and 299 and late variety 331. But this late variety of cane has been rejected by the Mills with the result that the growers have to carry the mid-season variety to the last day of crushing season with the result that they are put to much loss owing to dryage of the crop during the last part of the season.

14. (a) Great changes have taken place during the last 7 years in the quality of cane available. Owing to the failure of other money crops the cultivators have to depend more and more on cane crop. The rapid development of Mills and consequent increased demand for sugarcane went on encouraging the cultivators to grow more and more cane.

(b) The quality of cane has been gradually on the increase. The approved varieties have completely ousted the old variety and Co. 210, 213, 214, 281 and 299 are at present the predominating varieties. Cane is liable to damages from frost, etc., to a limited extent and the average percentage of loss to these canes would be 20 per cent.

17. In a year of under-production, the supply of cane is appreciably influenced by the competition of other factories. The price is not appreciably influenced by the competition.

19. The cultivation of cane in 1936-37 is in excess of requirements in this area with the result that 20 per cent. of cane had to be left in the field. In their helplessness, the cultivators had to set fire to about half of the surplus cane and the other half is still standing in their field. Neither the Mills nor the Government Agriculture Department have so far taken any steps to advise the growers as to how they should deal with the remaining surplus cane which are standing in their field. With the bumper cane crop, it was expected that the cultivators would be benefited but owing to over-production and consequent difficulties and delay in disposal of cane and low prices, the cultivators have been generally worse off than if they had not grown cane at all.

It is very necessary that over-production should be restricted.

20. The following is the cost of cultivation of cane in one acre of sugarcane by average cultivators:—

	Rs.
Ploughing	10
Sowing	4
Manuring	10
Seed with carting	15
Rent	10
Cutting and cleaning cane for supplying to Mills	4
Spading after cane is cut	4
	—
	59
	—

The average outturn is 200 maunds per acre.

NOTE.—Sugarcane very much exhausts the field and hence the land which produces cane in a certain year will produce very poor crop during the following year which is another loss to the cultivators.

21. The following are the main difficulties of cane-growers in cultivation of cane and the delivery to the factory:—

- (1) Larger distance of cane fields from weighment centres at which cane is delivered to the Mills and consequent higher carting charges of cane.
- (2) The growers feel great difficulty in getting purjis. In many places, they have to pay for them.
- (3) The growers greatly suffer from weight cutting by weighment clerks.
- (4) The carts are greatly detained at Mills gates. At one Mill gate (now India Sugar Mill at Hassanpore Road in District of Darbhanga) this position is very harassing to the carters, who had, during the last season, generally to wait for 12 hours at the gate. This causes great hardship to the growers specially to the bullocks carrying the carts.

22. (a) I am of the view that compulsory acquisition or leasing of land for cultivation of cane by factories is not only impracticable in Indian conditions but it would be undesirable from the point of view of the grower's interest.

(b) I am not in favour of allotting different areas to different factories for supplying sugarcane

24. (a) I am in favour of fixation of a quota of sugar manufacture by factories.

- (b) (i) Licensing of new factories.
 (ii) Extension of existing factories.

My reasons for the above are that benefit of Sugar Industry should go to as many people as may be possible and at present we find that the Mills are congested in certain districts. If a system of fixation of quota for manufacture of sugar industry and licensing new factories and extension of existing factories are adopted the districts or areas with smaller number of factories will be able to spread the industry and derive benefit from it.

27. The mileage of roads in my vicinity is adequate and the condition of main and feeder roads is tolerable.

29. The average cost of transport of cane by cultivators is six pies per maund per mile only and 25 per cent. of cane is carried on growers' own carts and the rest is transported on hired carts. The cost of hiring is six pies per maund per mile.

30. In Municipal areas the owners of the carts have to pay the cart registration fees from Rs. 2 to Rs. 4 per cart.

46. There has been considerable variation in the prices of gur in my area due to over- and under-production of cane.

48. The bases on which the minimum price of cane is fixed is not satisfactory.

The price of sugarcane is linked to the price of sugar. There has been a tendency of rate cutting among the Indian sugar manufacturers with the result that the price of sugar has been too low. The minimum price of sugarcane should be fixed on the basis of cost of cultivation and with a margin of saving to the growers for their personal labour. For this a corresponding basic price of sugar should be determined. Any rise in the price of sugar over the basic rate should give a corresponding rise in the price of sugar over its minimum rate. For superior, early and late variety of cane, bonus payments over and above minimum rate will be very desirable and I consider it feasible to introduce the system.

(6) *Replies to the questionnaire issued by Tariff Board, by Mr B. K. Narain Thor, Modhubani, Bihar.*

11. (a) 80 acres of land.
 (b) 20 acres of land.
 (c) Co. 210, Co. 213.

(d) The system of cultivation generally is by the country ploughs. There is no tendency generally to cultivate canes in fallow lands. As regards rotation, the people in my part of the country do cultivate canes in their fields at every alternate years. Manuring is generally done by cow-dung, ashes and other primitive methods which have been carried down from generation to generation.

(e) The average yield per acre is 300 maunds (per standard maund of 82½ lbs.).

(f) The cost of cultivation per acre is as follows:—

Seed 44 maunds—Rs. 14.

Ploughing 22 ploughs at 4 annas each—Rs. 5-8.

Spading 3 times which requires 12 labourers at a time, which means Rs. 3 per time, the total spading cost amounting to Rs. 9.

Manuring—Rs. 10 per bigha.

So that the total cost for cane cultivation is—

	Per bigha.
	Rs. A.
(a) Seed	14 0
(b) Ploughing	5 8
(c) Spading	9 0
(d) Manuring	10 0
Total	38 8

12. Early plantation is more successful than late plantation. We have to allow cane to stand in the fields for 13 months and then only they become fit for being cut. Country manuring of cow-dung and oil-cakes are more useful than the artificial manures. Artificial manures do good only to the growing crop and do not help the soil whereas our country manures such as cow-dung and oil-cakes help both crop and the soil.

The Agriculture Department of my Province has practically rendered no assistance to the mass cultivators. There has been no provision by this department to educate the public for growing improved cane. There is also no provision for the distribution of the seeds to them, and as the Officers of this department do not come in direct touch with the masses, the latter have been following their own time-honoured methods of cultivation.

14. The quantity of cane available has increased to a great extent.

(b) The quality of cane has also improved.

15. The cane liable to damage from frost, disease and insect is 25 per cent. of the total plantation.

16. Though the production of sugarcane in 1936-37 has been the highest yet the production cannot be called in excess of the requirements of the area under cultivation. In these days of economic depression, the wants of the poor cultivators can be met to a great extent by this crop which is the only money crop available now-a-days. What the Government should do in it is to provide better facilities by opening more factories and arranging for quick disposal of the canes.

20. *Vide* question 11.

21. The main difficulty of the cane-growers in the cultivation of cane consists in—

(a) Want of capital. '

(b) Dearth of suitable cattle for ploughing.

(c) Dearth of proper manure. '

(d) Want of technical advice and proper training.

(e) The generality of cultivators being in possession of small patches of land, it becomes rather difficult for them to grow cane in a scientific way.

(f) Want of irrigation facility: watering of sugarcane crop is extremely necessary in the months of March and April.

In most cases there is no suitable arrangement for storing of canes at proper places, consequently people experience great difficulty in taking their cane to Railway Stations which lie at a great distance from the cane-growing fields. The difficulty is enhanced all the more as there are no transport facilities for want of proper roads and proper vehicles. There are other kinds of difficulties as well, such as difficulties in obtaining purji, the difficulty in getting the canes weighed properly at proper time and other malpractices prevalent in the granting of purji. No cartage is given in the Darbhanga Sugar Mills, Ltd.

These difficulties can be overcome (a) if more transport facilities are given by improving the means of communication, (b) more central depôts are opened for storing canes and more Tramways are provided for taking cane to the factories, (c) stricter control is exercised by the authorities concerned in granting Purji and stopping other malpractices.

22. (a) The previous Tariff Board was right in its conclusion that compulsory acquisition of land for the cultivation of cane is impracticable in Indian condition. The acquisition is also necessary inasmuch as people here themselves cultivate so much cane in their fields as one beyond the purchasing capacity of the Mill.

(b) The zoning system does not seem to work well for it creates a monopoly of one factory over a particular area and also takes away the liberty of the cane-growers in selling their cane to the market of their desire. Besides it also makes the poor cultivators a prey to the whims and caprices of the monopolies of a particular factory.

24. (a) We are in favour of fixation of a quota for sugar manufacture by factories, for this will ensure an idea of certainty in the minds of the cultivators and will also lead to ready disposal of the cane.

(b) Yes, we are also in favour of licensing of new factories inasmuch as the existing factories are insufficient to meet the present demands of the people. It is also necessary that the existing factories should be extended and their crushing capacity increased so that more cane can be consumed.

27. The mileage of roads in my vicinity is inadequate and insufficient. The condition of main road and feeder roads is far from satisfactory, consequently country bullock-cart experience great difficulty in taking cane to the Railway stations often lying at great distance from cane-growing area. The number of feeder roads is few and far between.

28. The biggest distance from which cane is brought by the road to the railway station is 12 miles and time taken is 20 to 24 hours.

29. The average cost of transfer of cane by cart per maund per mile is 3 pies. It may vary according to the condition of the road. 40 per cent. of the cane-growers have their own carts and the rest, that is 60 per cent. of the growers, have to hire carts.

30. Yes, sometimes when the carts have to cross the river they have to pay ferry duty.

36. The Tramway system has proved very advantageous to mass cultivators, inasmuch as it saves a good deal of time, labour and money. But the present number of tramways is mostly inadequate, and more speed arrangement should be made for its extension in far-off villages. The extension will prove a real boon to those cultivators of cane who experience enormous difficulties in taking their cane to the railway station situated at a distance of 8 to 10 miles from the cane-growing area.

Special difficulties in laying out a tramway system appear to be none.

39. Generally a factory in my vicinity assists the cultivators only by giving advance in cash. The factory does not give any other assistance in the shape of either seed or manures.

42. The arrangement for weighment of cane is to weigh cane at the weighbridges. But the difficulties experienced there, are too many. The weigh-clerks are generally a set of dishonest people who taking advantage of the illiteracy of the ignorant masses, underweigh the canes in most cases and put the poor growers to a loss of several maunds.

43. The prices have fluctuated from 8 annas in 1930-31 to 2½ annas in 1936-37. The prices do tend to vary at different prices in the same season. But it may be noted that while the prices rose up with an advance in the previous season it has gone down gradually this year.

44. The prices of cane do bear a certain relation with the market of the sugar.

47. Some persons at times have brought complaints regarding the payments of prices not quite consistent with the prices fixed according to the Sugarcane Act.

48. The basis is not satisfactory. Due consideration should be paid to costs and difficulties of cultivators.

49. It is possible and desirable to give bonus to the superior, early and late cane-growers as it will serve as an impetus and encouragement to them. Thereby there will be an improvement in the cultivations.

51. The possibilities are bright.

79. 5 per cent. on the capital invested will be a fair dividend considering the different rates and the hard times.

90. No. Java sugar is not preferred to Indian sugar.

91. Yes. The present quality of Indian sugar is equal to that of the imported sugar. The factory authorities, however, should take more pains to make their sugar refined.

93. Yes, the Survey would be advantageous.

94. Yes, the Central All-India Selling Organisation will be profitable.

100. Factory sugar has almost completely replaced gur in the sweetmeat trade.

105. The levy of the sugar excise duty of 1934 and 1937 has appreciably affected the prices of sugarcane and may be said to be one of the causes of the discouragement of the cane-growers.

108. The protection given to the sugar industry has been effective to a very great extent. This protection has been the chief reason of starting so many factories in India during recent years.

109. The protection should be given to a greater extent for the remaining period as sugarcane is the only crop which fetches more money to the poor cultivators than any other crop.

110. The following measures are considered necessary for the development of the industry:—

(a) Arrangement should be made for permanent Government Cane Inspectors.

This will be a check upon the too many corrupt practices of the employees of the factory.

(b) Proper education and training should be given to the growers so that they may grow better crop and get better advantage.

(c) Manures for sugarcane have been found very useful. Should be provided to the growers at cheap rate.

(d) Tramways system should be introduced. More feeder roads should be constructed and kept in order.

(7) Replies furnished by Rai Sahib Nolini Mohan Bhaduri, Deputy Chairman, Madhipura Central Co-operative Bank, Ltd., Member, Divisional and District Sugarcane Advisory Committees, representing the cane-growers of North Bhagalpur, Bhagalpur, Bihar.

At the outset I may submit that the following answers to the questions are based on my personal experience only:—

Raw materials.

10. Yes; I undertake cultivation as I am myself a sugarcane-grower since a long time. I did neither purchase any land or take any land in lease specially for sugarcane cultivation but I grow it on my raiyati lands which exist from before.

11. (a) The total area of the land in my charge for sugarcane cultivation is about 30 acres at present.

(b) For the crop of 1936-37 the whole area was under cultivation of sugarcane. In the previous years it varied from 10 to 15 acres.

(c) For the last 5 or 6 years Coimbatore variety of cane is being grown.

(d) Ordinary local system of cultivation is in vogue in this part of the country, i.e., cultivation with ordinary local plough and bullocks but for the last several years the improved mode of cultivation taught by the Kamdars under the Agriculture Department is resorted to.

Fallow lands are spaded first by the labourers, then the lands are ploughed up and made fit for growing sugarcane.

In the fields which are reserved for sugarcane cultivation there is no rotation of crop. In this part of the country the same land produces these successive crops on one sowing of seeds, the second years' crop being the best and the third year's crop is not good which is sometimes rejected by mills. Ordinarily large areas are not properly manured. In smaller areas dung manure and oil-cake manures are used in this part of the country.

(e) & (f) The yield of Coimbatore variety of sugarcane, which is the only variety now grown in this part of the country, varies from 230 maunds to 340 maunds per acre according to the quality of the land and irrigation facilities.

Cost of cultivation per acre is about Rs. 125 including the price of seedlings on the average. This includes the cost of harvesting also.

It is difficult to give in detail the cost of labour in cash because in many places the labourers are paid in grains which the labourers like.

Yield of gur jaggery per acre from the sugarcane grown varies from 35 to 45 maunds if the cane is crushed by the cultivator and gur is made.

12. (a) I kept 1 acre of land specially for experiment. I used to grow formerly four varieties of cane for demonstration to the members of Co-operative Societies under the Madhipura Central Co-operative Bank. Many members used to take seedlings of different varieties of cane free. I used to demonstrate the cultivation of different varieties.

I used to cultivate (1) Shamsora variety of cane of Bengal which is very thick, faint yellow in colour, soft and very high. This is the best kind of sugarcane chewing. Gur jaggery produced from this variety is the best.

(2) Red Mauritius variety has the largest percentage of sucrose. It is also very thick and high.

(3) Coimbatore variety the seeds of which were supplied by the Agriculture Department. It is the only variety now grown. Percentage of sucrose is less than in the aforesaid varieties.

(4) Bhulia variety which was formerly cultivated in this area. The cane is thin and hard. Percentage of sucrose is higher than in No. 3. But this is not accepted by the mills.

Varieties nos. (1) and (2) require some manuring and irrigation.

For the last several years Coimbatore variety is only grown as the cost of its cultivation is lower and it can stand flood-water.

(b) I don't do it at present but formerly I used to do it for free distribution to the members of Co-operative Societies.

13. Agriculture Department of our Province has not yet let us know whether there are early and late varieties of cane.

14. (a) Larger area has been under cane cultivation year by year and larger quantity of sugarcane has been available.

(b) The quality of cane has been the same. The reason is that no distinction is made by the factories regarding the quality of the cane and same price is given.

15. (1) No damage is caused by pest.

(2) There is considerable damage caused by disease and insect pest. Damage caused by jackals, rats and other wild animals from the time of cultivation till harvesting is not inconsiderable in this part of the country.

(3) Average loss is not less than 10 to 15 per cent.

18. (b) (i) Much depends on timely rainfall where there is no arrangement for irrigation. If there is no rain after sowing there is failure of crop.

(ii) In former years price of gur jaggery varied from Rs. 2-8 to Rs. 3 per maund. This year the price fell down from Re. 1-8 to Rs. 2 but afterwards it fell down to Re. 1 to Re. 1-8 in this part of the country.

19. Yes; there has been over-production in this year. It was much more than the demand by the mills. Making of gur jaggery was difficult and the price fetched was very low. The price was not sufficient to cover the cost of making gur. The area under cane cultivation has increased by lips and bounds. The restriction, if possible, is necessary. This matter was put by me in the Bhagalpur District Sugarcane Advisory Board. I put the matter in the following way:—

“Whether it is advisable to devise means for restricting the area for the cultivation of sugarcane. The resolution of the Board, dated the 1st April, 1937, on the subject was as follows:—

Considered further the question of restriction of sugarcane cultivation and decided that this year's experience has probably been sufficient for rayats and there is less likelihood of excess cane being grown next season.”

20. Answer has been given above in answer to Question 11 (c) and (f).

Further details not available as the cultivators cannot give the exact cost of labour as he and his family members all work for the cultivation.

21. (a) The difficulties of cane-growers:—

(1) Irrigation in case of failure of rains.

(2) Protection against wild animals and rats.

(3) Want of manure.

(4) Prevention of disease and insect pest.

(1), (2) and (3) require money, which is difficult to get, to overcome.

(4) The Agriculture Department can only suggest means.

(b) Delivery to factory:—

This is the main difficulty of the cane-growers.

(i) The mills distribute *Purjis* (a sort of order paper to take sugarcane) to the cane-growers. It is very difficult for the cane-growers to get them. The mills generally do not enter into any contract with the cane-growers for the supply of sugarcane. The mills issue *Purjis* to the cane-growers. The fortunate cane-growers can get *Purjis* early. The *Purjis* are at the disposal of Jamadars of the mills who act under the mills Sugarcane Inspectors. The distribution of *Purjis* is according to the whims of Jamadars and Inspectors and other matters (which it is not proper to disclose). Many complaints by the cane-growers were made to the Government Inspectors about this distribution of *Purjis* which came before the Advisory Board through the Government Inspectors of sugarcane. As there is no provision in the law for controlling the distribution of *Purjis* nothing substantial by way of redress could be done.

The best thing for the mills to do to stop this complaint is to select a village headman for the distribution of *Purjis* in his village who will distribute them to his villagers. The mills can get the names of these headmen of the villages from the executive officers of the Sub-division.

(ii) *Weightment and delay.*—There are great many abuses in them. The Government Inspectors, the Advisory Boards have tried their utmost to put down many abuses but still it cannot be said that there is no further abuse.

The complaints by the cane-growers were that shorter weight used to be entered in the mill books by the mill servants and excess was kept apart and after the accumulation of excesses it was entered in the name of some fictitious persons or some persons under the mill servants and the price was taken by the mill servants.

There was complaint that the representatives of purchasing agents are not permitted to remain present at the factory bridge when consignments of cane are being weighed at the factory. The matter came before the District Sugarcane Advisory Board, Bhagalpur. It was resolved on 4th January, 1937, as follows:—

Resolved that it would be a satisfactory solution if a rule could be framed making it compulsory for the factory authorities to permit an authorised representative of the purchasing agent concerned to remain present at the factory weighbridge on such occasion.

Formerly the factory used to keep one weighing machine in the weighbridges and there was great delay in weighment and the poor cane-growers had to spend the cold nights of December and January in open fields. On the instance of the Government Inspectors and the Board now the factory keeps more than one machine. Still during the busy season there is delay in taking delivery.

22. (a) No compulsory acquisition or leasing of land is necessary on the other hand it will be harmful to the cane-growers. The mills can get more than sufficient cane from the cane-growers.

(b) "Zone" system will be injurious to the cane-growers. They will be, in that case, at the mercy of the mills. The mills may make their contracts with the cane-growers.

24. (b) (i) & (ii) I am for licensing of new factories and extension of existing factories.

The reason for this is sugar industry will increase. The sugarcane-growers will be much benefited if their canes are taken by the factories in larger quantities, sugarcane being the only cash crop.

26. Average weight of cane carried by in this part of the country is from 12 to 14 maunds but the factories insist that 12 to 14 maunds should be the maximum.

Rubber-tyred cart is not possible in this part of the country as the roads are bad.

27. Condition of main and feeder roads are bad in this part of the country specially if there is rain and in the months of November when flood-water does not fully dry up.

28. (1) Up to 6 or 7 miles.

(2) One or two days and in some case 3 days.

(3) No protection.

29. Some cane-growers supply canes in their own carts, otherwise they hire.

Average cost of hiring within 5 miles area is one anna per maund and exceeding 5 miles it is As. 1-3 per maund for the whole distance.

30. When the carts have to cross the rivers the cane-growers have to pay ferry toll where there is no free ferry. No other cost is charged.

31. (1) The carts come regularly and the supply is continuous. No cane is taken on the pay day.

(2) The detention of carts is within 12 hours.

(3) There have been double weighbridges, sometimes that is also not sufficient.

33. Yes; There has been a charge.

Eastern Bengal and Bengal and North-Western Railways have reduced the rate by 25 per cent. recently in this year on the representation of Government as there was heavy surplus cane towards the end of the season.

39. So far as petty cane-growers are concerned no arrangement has been made in this area. There is the practice of issuing *Purjis* only.

No advance or any help is given now to the petty cane-growers.

40. Canes are taken from agents also who get something from the cane-growers.

41. Cane were taken from cane-growers Co-operative Societies also this year. The societies do not get anything.

42. Weighments are made at weighbridges at fixed stations outside the factory.

In this area payments are made on a particular day in a week. Payments are made within a week from the delivery.

43. The price of the sugarcane paid by the factories in controlled areas is according to rate fixed by Government. No variation can take place unless sanctioned by the Government.

44. In fixing the rate of purchase of sugarcane the Government take into consideration the price of sugar per maund.

46. There has been a variation the price of gur jaggery this year. The price in the beginning was Rs. 1-8 to Rs. 2 it further fell down to Re. 1 to Re. 1-8.

48. No, not fully satisfactory. Very small margin of profit is left to the cane-growers. The price should be fixed after considering the cost of cultivation and cost of carriage to the factory.

51. It will be very beneficial to the cane-growers if both early and late varieties of cane are introduced. The cane-growers will get ample time for supplying cane to the factories.

52. Cane-growers are benefited to some extent by the department.

Large number of Co-operative Cane-growers' Society should be formed.

Remedies for disease and insect pests should be found out.

Marketing.

90. Generally Indian sugar is prepared locally by all people.

Some persons prefer Java sugar only for making tea. According to them Indian sugar destroys the flavour of the tea.

100. No appreciable replacing; because in sweetmeat trade sugar only is used and gur jaggery is used in very small quantities.

101. As regards sweetmeats there is no scope for expansion of the industry.

In manufacture of fruit preservation and canning machinery will be required. Moreover as long as there is economic depression there is very little chance of success of these industries.

105. Sugarcane excise duty was borne without much complaints before but the additional duty of 1937 has told heavily on sugarcane industry. It has affected the mills hence cane-growers also have been affected. It has increased the price of sugar, otherwise owing to the competition amongst the factories the price of sugar would have been much lower for ready sale.

Claim for protection.

108. Unless there was protection the foreign sugar specially Java sugar would have flooded the Indian market because the cost of production of Java sugar is much less. The result would have been a death blow to the Indian sugar industry. It would have competed with Java sugar.

109. The protection must be there otherwise the infant Indian sugar industry which has been supplying food to many will be nowhere.

The present rate at least should be kept till the period April, 1938, to March, 1946, otherwise foreign sugar specially Java sugar will be undersold which will destroy the Indian sugar industry in *toto* the cost of production of sugar being more in Indian than in other countries producing sugar for export.

110. By reducing the excise duty besides keeping alive the protection duty.

If the excise duty is reduced the factories will be able to sell the sugar at a lower price giving the poor cane-growers a greater margin of profit at the same time.

111. The effect of import duty on molasses has been beneficial to the Indian sugar industry inasmuch as the by-products, molasses of the factories may be sold at cheaper rate hence the sale will be larger bringing more profit to the mills which will ultimately benefit the cane-growers. If the factories get a good profit they will not grudge to give a good price for the cane purchased from cane-growers.

(8) *Representation, dated the 14th June, 1937, from Mr. Arikshan Sinha, Pleader, Muzaffarpur, Bihar.*

As required by the Director of Industries, Bihar, in his letter No. 9759-83, dated Patna, the 6th June, 1937, I have the honour to give you my humble opinion and answers to the several questions contained in the questionnaire issued by the Tariff Board.

Before attempting to give my opinions and answers I must point out as to who I am and whom I represent and have represented in the Past. I am a raiyat (Kisan) and am a raiyat cane-grower of considerable area. I am the founder of the Kisan movement in Bihar. I represented the Kisans (Raiyats) of Bihar before the Southborough Commission in 1918 as Kisan leader. In 1920 the Bihar Government appointed me as a member of the Shahabad Riot Conciliation Committee which met under the presidency of Sir Haviland LeMesurier, K.C.I.E., I.C.S. In 1921, the Bihar Government nominated me as a member of the Bihar Tenancy Amendment Committee. In 1922 I was invited to appear as a witness before the Criminal Procedure Code Amendment Committee which met at Delhi under the presidency of Rt. Hon. Sir Tej Bahadur Sapru, the then Law Member, Government of India. After that I appeared before the Royal Agricultural Commission at Patna and also before the Royal Labour Commission at Patna both time as a representative of the raiyats of Bihar. I was an elected member of the Bihar and Orissa Legislative Council in 1926. I have, since then, appeared before not less than 10 Committees both at Patna and Delhi, as a raiyat representative of Bihar. This is enough of my introduction to the Members of the Tariff Board and of my right to speak on behalf of the raiyats and cane-growers of North Bihar. During the last sugarcane crisis in Bihar I represented the cause of the raiyat cane-growers of North Bihar before the Hon. Mr. Yunus, the Premier of Bihar, invited him to North Bihar and accompanied him as the leader of the raiyat cane-growers of North Bihar to several sugarcane areas and I had a volume of correspondence with the Premier of Bihar on the grievances of the poor raiyat cane-growers of North Bihar. I tried my level best to have all the standing sugarcanes belonging to the raiyat cane-growers of North Bihar crushed and the Bihar Premier tried his level best to help me but nearly about one crore maunds of sugarcane belonging to the raiyat cane-growers of North Bihar was left uncut and standing as all the sugarcane mills closed crushing earlier in spite of the persuasion and request of the Bihar Government. The Sugarcane Inspector of Muzaffarpur informs me that more than 30 lakhs maunds of sugarcane has been left uncrushed and standing in Muzaffarpur district alone and what to speak of the figures for entire North Bihar comprising of the districts of Saran, Champaran, Muzaffarpur, Darbhanga, Monghyr, Purneah and

North Bhagalpur. These accurate figures the Board will get from the Director of Industries, Bihar. I must frankly tell you that raiyat cane-growers of North Bihar have suffered immense loss to the extent of not less than one crore rupees during this year cane crushing season on account of the indifference of the Bihar Government and the Government of India. I will give you the detailed account of the loss and the reasons therefore in my oral evidence before the Tariff Board. I wired several pathetic appeals before His Excellency the Viceroy, the Governor of Bihar, the Bihar Premier, to come to the immediate rescue of the ruined raiyat cane-growers of North Bihar but the response was very poor and inadequate. I had also urged that the sugar excise duty be suspended temporarily from the 15th April in order to help the poor raiyat sugarcane-growers but the Government of India would not budge an inch and must have its pound of flesh whether the poor raiyat sugarcane-growers are ruined or not. The Bihar Government declined to move the India Government for temporary suspension of the sugar excise duty as prayed for in my request to the Bihar Government. I will produce the entire correspondence before the Tariff Board at the time of my oral evidence. This is sufficient introduction. I now proceed to answer the questionnaire as far as my poor knowledge is concerned.

Enclosure.

ANSWERS TO QUESTIONNAIRE.

1. I cannot give any reply as I am not a factory owner but I am a raiyat cane-grower.

2. No reply for reasons stated above.

3. Cannot give any reply for reasons stated above.

4, 5 & 6. No reply.

7. I am unable to give any satisfactory answer to this question, as I am neither an expert nor an economist but I am only a representative of poor raiyat cane-growers of North Bihar.

8. I cannot give any definite reply.

9. The poor raiyat sugarcane-growers have received no technical assistance either from the Imperial Institute of Sugar Technology or from the Industries Department of Bihar Government. They have got no genuine representatives on the different Sugar Advisory Boards but the Bihar Government has promised to take in genuine raiyat sugarcane-growers' representatives on the different Sugar Advisory Boards from the next year. I will produce the correspondence at the time of oral evidence. Hence unable to offer any suggestions at present.

Raw materials.

10. Yes. I did undertake cultivation of sugarcane in my own kashkari lands.

11. (a) I hold about 40 highas of kashkari lands.

(b) The average area under cane each year has been about 7 acres. But this year I have myself discontinued sugarcane cultivation and have advised raiyat sugarcane-growers to do the same on account of the step-motherly treatment of the poor raiyat sugarcane-growers by the Government of India and the Bihar Government.

(c) I generally grow No. 210 and No. 213 of sugarcane in my lands.

(d) We give cow-dung, rakh for manuring. We also give *sanai* and *urid* manuring. We grow sugarcane in each field after a rotation of 3 years.

(e) In my part of the district, the average is not more than 150 maunds for No. 210 and 200 maunds for No. 213. I have got no idea of sucrose content. This can be answered by factory owners.

(f) The following is the detail of cost of cultivation:—

	Per acre.
	Rs.
Ploughing and weeding	6
Ordinary manuring	5
Cost of seedlings at the rate of 2 maunds per cotta or 45 maunds	12
Total cost of cultivation	23

Besides this, we had to incur extra cost of cutting this year at the rate of nearly about Rs. 3 per acre. If we add Rs. 3 to Rs. 23 our cost of cultivation has been Rs. 26 per acre. Besides the land must bear the Malik's rental for 2 years which comes to an average of Rs. 4-2 per bigha. Thus the raiyat sugarcane-grower has to incur an expenditure of Rs. 35 per bigha as cost of cultivation and Malik's rents.

12. (a) Nothing as I do not experiment in cane cultivation.

(b) Nothing.

13. I have not tried any experiment. The Agriculture Department of my province in a huge farce. The poor raiyats have not been in the least benefited by this Department. The Ministry of Agriculture is another farce.

14. (a) & (b) The quality and quantity of canes available have both deteriorated during the last seven years. I will give detailed reasons at the time of oral evidence.

15. Cane is liable to damages from frost, disease or insect pest but I cannot give an estimate of the percentage of loss through these diseases.

16. This is for millowners to answer.

17. This is also for the millowners to answer.

18. Millowners to answer.

19. Yes, the production of sugarcane in 1936-37 is the highest on record. It was not in excess of requirements in my area where the Motipur Sugar Mill is situated. I consider one restriction necessary and that is that the sugar mills ought to be compelled to take and crush first the sugarcane of ryot sugarcane-growers situated in places fifteen miles away from the sugarcane from each side that is 15 miles North, 15 miles South, 15 miles East and 15 miles West. After this they may take and crush the sugarcane of distant areas.

20. The cost of cultivation per acre is nearly Rs. 35 a detail whereof has already been given by me above. In ordinary years the outturn and income per acre was at the average of Rs. 40 to Rs. 50 per acre. But this year his average income has gone from Rs. 20 to Rs. 25 per acre. The cultivator has suffered a loss of Rs. 10 per acre. This was owing to the reduction of price to As. 3-3 per maund. Out of this from one anna to five pice was given to cartmen for cartage. Half anna per maund was spent in cutting sugarcane. Thus the poor ryot sugarcane-grower got a nett price of six pice to seven pice per maund. Thus the poor ryot sugarcane-growers have been completely ruined this year. I will give you a detail of the cost of cultivation in my oral evidence.

21. The main difficulties of the raiyat cane-growers are the favouritism shown by the factory and its agents in distribution of *purjis* for cane cutting. There is a lot of corruption in distribution of *purjis* and weighing at the weighbridges. Nobody is there to hear the complaints and the grievances of the poor raiyat cane-growers. Big landlords are the Agents of the sugar factories and they instead of getting the raiyat's sugarcane crushed try to crush the raiyats themselves. Thus the poor

raiylats are between the devil and the deep sea. If the Board cares to examine ignorant raiylats in villages, the tales of woes and suffering of the raiyat cane-growers will be brought to light. This is the main question. I had long discussion with the District Sugarcane Inspector who is a Deputy Collector on this subject and he agreed with my suggestions.

22. (a) The previous Tariff Board was right in its conclusion. I fully agree with its conclusion. There should be no compulsory acquisition of land for cane cultivation. Everything should be voluntary, otherwise the raiylats will become landless and the lands will pass into the hands of capitalists and frustrate the protecting provisions of the Tenancy law in favour of the raiylats.

(b) With this proposal I agree. But the present system of one-sided agreements of factories and its agents with the raiylats should cease. The factories and their agents should also execute agreements in favour of raiyat sugarcane-growers agreeing to compensate them. Without adequate protection to the raiylats, I am afraid, the Tinkathia system of old Indigo factories might be revived and the raiylats rescued by Mahatma Gandhi from the clutches of Indigo factoryowners might be placed again in the clutches of sugarcane factories. The raiylats of Bihar look more towards Mahatma Gandhi, Babus Rajendra Prasad, Srikrishna Sinha and Dr. Syed Mahmud for protection than towards the present day *interim* puppet Ministers who do not in the least enjoy the confidence of the raiylats. If they assert in the affirmative let them accompany me to any raiylats' village and see what reception they get from the raiylats. I challenge the present Ministers on this subject. If the Government co-operate with the raiylats' representatives the zone system might be worked. But the representatives must be genuine ones and not bogus and fictitious ones set up by the District Magistrates and the Commissioners.

23. The question is entirely for the sugar millowners to answer.

24. Yes, reasons will be given in my oral evidence.

25. Sugar Millowners to answer this question.

26. Gate canes are carried entirely by carts and no lorries used for this purpose. Average weight of cane per cart is 16 maunds. Other informations to be supplied by Millowners.

27. Millowners to answer this question.

28. Millowners to answer this question also.

29. I cannot give any average cost of transport of cane by cart per maund per mile. Some cane-growers employ their own carts and some have to pay hire at the rate of half anna to 1½ annas per maund according to distance. Half anna per maund is the hire for canes carried within a distance of one or two miles from the mill gates. Up to 10 miles from 2 miles the hire is one anna per maund. After 10 mile the hire is 1½ annas per maund.

30. No.

31. Millowners to answer this question.

32 & 33. Millowners to answer.

34. Railway freights ought to be considerably reduced for these commodities by at least 50 per cent. and should be brought on the last level of Railway freight fixed for cane this year. By the reduction of railway freights on manures the poor cane-growers can get manures cheaply.

35. Factoryowners can answer this question. But I think the charge for transport of cane by Railway is deducted from the price to be paid to cane-growers.

36. Tramway system will certainly be advantageous but I cannot say anything about the difficulties of laying out such a system.

37. No.

38. The information can be supplied by the Millowners. But so far as I know very little cane is purchased directly from cane-growers. Contractors or agents work as middlemen between the cane-growers and millowners. It is they who take canes from cane-growers and supply the same to millowners and charge a decent commission from millowners. This commission comes out from the price to be paid to cane-growers.

39. Millowners have no direct concern with the actual cane-growers. Advance is given at the rate of Rs. 10 per acre through contractors or agents in cash but no seed or manure is supplied nor any other assistance is rendered to cane-growers.

40. Factories enter into contracts with agents for supply of canes and they pay commissions to agents for canes purchased by them from raiyat cane-growers and supplied to them through such agents.

41. In some places there are cane-growing or supplying Co-operative Societies. I have not much information about these societies.

42. Canes are weighed at weighbridges. Payments are not made at the time of delivery of canes but payments are made to Agents who are mostly big landlords and these landlords deduct the price of raiyat canes towards the satisfaction of their rents. Very little goes to the pockets of raiyat cane-growers. They get only rent receipts for the canes supplied by them.

43. Factoryowners to supply this information. Prices do vary at different periods of season.

44. This is for the Government and the Millowners to answer.

45. No information on this subject can be supplied by me.

46. I am unable to supply these informations.

47. No factory has ever paid any price in excess of the minimum rate fixed by the Government.

48. No. The prices are fixed arbitrarily without taking into consideration, the grievances of the cane-growers. Cane-growers should get at least six annas per maund of net price after deducting cartage.

49. Bonus payments ought to be made over and above the minimum rates for superior, early and late varieties of canes.

50. Generally crushing season begins from the middle of November and ends by the 15th of April each year. In my opinion the period is not sufficiently long for economical working. This year I appealed to the Local Government and the Government of India to compel the millowners to continue the crushing season up to the 30th June so that all the standing canes might be cut and crushed. But the Government expressed inability and replied that they can only persuade and not compel with the result that the mills closed earlier leaving about one crore maunds of standing canes uncut. I have got the entire correspondence with me.

51. The Government and the experts and the millowners can answer this question.

52. Not in the least. I had strongly condemned the Imperial Council of Agricultural Research in my evidence before the Royal Commission on Agriculture presided over by the present Viceroy. We are not satisfied with the Agricultural and Co-operative Departments of our Government. I consider the Agricultural Department of our Government as a huge fraud and Ministry of Agriculture another fraud. India is a purely agricultural country. Here the Ministry of Agriculture must be as much active and responsible as the Agriculture Ministry in England. I make certain proposals to the Hon'ble Agricultural Minister and he gives a reply which will make the members of the Board laugh. I will produce before them the letter written to me by the Bihar Agriculture Minister.

Labour.

53. Factoryowners to answer.
 54-56. For factoryowners to reply.
 57. Factoryowners can supply this information.

By-products.

- 58-63. The millowners can answer these questions.
 64-72. Millowners can only answer these questions.

Capital Account and Overhead Charges.

- 73-79. It is for millowners to answer these questions.

Efficiency of production.

- 80-82. Millowners to answer these questions.

Marketing.

Millowners can answer all these questions commencing from No. 83 and ending with No. 107. But I take up Question No. 105. In my humble opinion the sugar excise duty of 1934 and (ii) the addition made in 1937 have completely ruined the raiyat sugarcane-growers.

Claim for protection.

The millowners can answer these questions.

Conclusion.

As a result of economic depression which began in November, 1930, the poor raiyats were ruined as they could not bear the burden of paying their maliks' rents. The produce of their raiyati lands was not sufficient to cover even the landlords' rents what to speak of their labour and profit. There was uneasiness and stir among the raiyats. In order to relieve economic depression His Excellency Lord Willingdon advised raiyats to cultivate sugarcane promising all sorts of help and assistance. His Excellency asserted that this was the only money crop available to the raiyats and in order to protect the cane-growers he promised to impose heavy tariff duty on foreign sugar and made the Indian sugar duty free. But His Excellency Sir James Sifton, Governor of Bihar and Orissa, warned the raiyats not to give up grain crops in favour of sugarcane, the so-called money crop. But subsequently the Government of India imposed heavy sugar excise duty which had very unfavourable results on the poor raiyat cane-growers. The innocent raiyats believed in the assurances of His Excellency Lord Willingdon, the then Viceroy of India, and started growing cane crops blindly in the hope that they will get sufficient money by selling sugarcane to meet the landlords' demands for rents and supply money to meet the demands of other necessities of life such as clothes for their family members, expenses for their religious festivals and marriage and *upanayan* ceremonies. But man proposes and God disposes. The greatest calamity of 1934 occurred in the shape of earthquake in North Bihar and this completely ruined the poor raiyats of North Bihar. But they went on with their hopes of the so-called money crop. But like cholera, plague and other pests this year appeared the cane crisis, which rendered the almost ruined raiyats completely ruined. I took up the cause of the raiyat cane-growers of North Bihar, petitioned and wired the Viceroy, the Bihar Governor, the Bihar Premier and the Agriculture Minister of Bihar to come to the immediate rescue of the raiyat cane-growers but they all turned their deaf ears towards my appeal. The Chief

Minister of Bihar came to North Bihar and toured in the interior of cane areas along with me and saw the distressing and deplorable conditions and lamentations of the poor raiyats who were on their way to complete ruin. But said the Chief Minister that his Government was unable to do anything in the matter but like myself he will appeal to and persuade the mill owners to extend the crushing season and he had no right to compel the millowners. So the poor raiyat cane-growers were thrown at the tender mercies of the millowners and their contractors and agents and these amiable people instead of getting the canes of the raiyats of Bihar crushed, managed their business in such a way that the poor raiyats themselves were crushed and to-day the poor raiyats stand bloodless, moneyless, grainless, clothless, starving and in skeletons before you. If you require to see them and hear their tales of woe, I will produce hundreds before you. They have suffered a loss of about 2 crores of rupees in North Bihar alone. I will give you the details of this loss in my oral evidence. For these raiyats of North Bihar this year's cane crisis was a greater calamity than the earthquake calamity of 1934. On my appeal the Chief Minister of Bihar asked me to submit my constructive proposals for the benefit of raiyat cane-growers. I proposed in my scheme for the protection of poor raiyat cane-growers that the sugar excise duty be temporarily suspended for the benefit of the cane-growers and the price of cane be not reduced. The Bihar Government replied that this proposal was beyond their province and so declined to make any recommendation to the Government of India. I wired to His Excellency the Viceroy but no relief came from that quarter also. But what the Bihar Government could do was that the price of canes was reduced from 5 annas a maund to eleven pice per maund. A gentleman who is a cane-grower just now whispers that the price was even reduced to $2\frac{1}{2}$ annas per maund. Indeed this was considered the greatest boon ever conferred upon the raiyat cane-growers. The Chief Minister was followed by his colleague the cane Minister who with perfect glee and without realising his responsibility said that the Government has reduced the cane price to $2\frac{1}{2}$ annas and this will help the cane-growers. He was questioned how and he maintained his silence and went away unheeded and uncared for. But all the same about more than a crore of maunds of sugarcane is still standing uncut in the fields of raiyat sugarcane-growers of North Bihar and the mills have all closed crushing. The reduction of cane price from 5 to $2\frac{1}{2}$ annas has made the raiyats of North Bihar to suffer a loss of more than a crore of rupees. But is there anybody to hear the lamentations and tales of woes and miseries of these uncared for raiyats? My second constructive proposal was that big people should be excluded from Commissioners' Advisory Sugar Boards and Collectors' Sugar Advisory Boards and in their places the genuine representatives of raiyats be appointed. The Government replies that this proposal of mine will be considered when the new committees for the next crushing season are appointed and so we must silently wait for the next year in expectation of this mercy from the Government. But we have waited long; our patience has been tired. We have been ruined. There is nobody to hear our pathetic tales. Hence we have taken a vow not to cultivate sugarcane again and I have advised the raiyat sugarcane-growers of North Bihar accordingly. We are now not going to pay any attention to the promises and assurances given by these puppet Ministers who do not enjoy the confidence of the country but shall patiently wait for the return of the Congress Ministers in power. I have said above that the cane price was reduced to $2\frac{1}{2}$ annas per maund. This entire $2\frac{1}{2}$ annas per maund did not go to the pocket of cane-growers. Out of this sum from one anna per maund to one and a half anna was paid for cartage, leaving a net profit for cane-growers to the extent of one anna to $1\frac{1}{2}$ annas per maund. But on account of dry season labourers had to be engaged for cutting canes at the rate of half anna per maund. Thus you see our ultimate gain comes to one anna to half anna per maund. I have said enough

for the raiyat cane-growers and I now beg leave to stop here. The more in my oral evidence.

- (9) *Reply to the General Questionnaire by Babu Dip Narayan Sinha, M.L.A., Hajipur, District Muzaffarpur, Deputy Governor, Bihar and Orissa Co-operative Federation, Ltd., Patna.*

Introductory.

Questionnaire framed by the Tariff Board will only yield information from the point of view of the millowner. Possibly the Tariff Board is only concerned with the exigencies of protective duty and excise duty on sugar. There are few questions, 7 out of 43, which can be answered by persons who are not concerned with mills. All the millowners or large scale planters who are themselves agents for supply of cane to the mills in the Province of Bihar, are large cultivators of sugarcane and have adopted mechanised method of cultivation. Small scale cultivation is on different basis; cost of cultivation and production in each case is vastly different. For developing the sugar industry in India protection and excise duty is necessary. The maintenance of these taxes on the sugar consuming public can only be justified if profits gathered by the small number of capitalists, i.e., millowners, are passed on by them, in part at least, to the extent of 50 per cent. to the cane-growers. Millowners are cultivators also and so far as they mill their own cane they will get the share of the profit or price assured to cultivators and being larger planters they would reap better profit owing to lesser cost of production by mechanised methods and lesser cost on transport as the mill would pay same price for their own cane as to the outside cultivators. Therefore passing on of the 50 per cent. profit to the cane-grower is not excessive.

If the cultivator does not get adequate return nothing will induce him to grow cane and mills will either pay high price or work short season. Thereby they would reduce their profits and cost of production of sugar will be kept high. This would defeat the ends of protective duty as the industry will not be assured against foreign competition.

In my view it is essential for the Tariff Board to consider not only conditions of sugar manufacture but also its other component part that is the condition of the cane cultivation and the effect of the duty and tax on the cultivator.

It has to consider if (a) the money collected by levy of duty on the consumer, (b) money saved to the country by exclusion of foreign import of sugar and, (c) money collected by taxing directly the Sugar Industry and indirectly the people, that is if all this money realised by various means remains in the pocket of a few capitalists or a moiety of it filters through to the cultivator who forms the larger part of the consumers. The Questionnaire as framed will not elicit the information how far the benefit reaches the cultivator.

The National Industry has to be saved from foreign competition. The State can interfere only for a limited period either by taxing imports or by laws and rules of control. The objective should be that within the period of protection industry should be insured against foreign competition by reducing cost of production to a level that foreign industry may not compete with it, but this should not be accomplished by exploitation of cultivator. The interest of the millowner and the cultivator will always militate unless cultivator is made a partner in the industry so that he may share in the profits. Only then compulsory acquisition or leasing of land or fixation of prices of cane or fixation of zones can be justified. Basis of 55 per cent. share capital for the cultivators, none to hold more than Rs. 100 or Rs. 200 worth of it in any individual name, would insure the cultivator against exploitation. He should have reversionary interest on the land given up in case the mill goes into liquidation. Management which

naturally would be in the hands of the capitalist should not have a predominating voice on share basis so that profits may not be diminished by extraordinary charges of service and commissions or through subsidiary firms. At present Managing Directors or Directors or individual shareholders find the capital. If the cultivator cannot find the money to buy the necessary shares, company or mill should advance the amount against shares at 6 per cent. per annum interest and recover it in easy instalments out of the cane supplied or dividends distributed.

Answers to Questionnaire.

1-4. Can not answer.

5. (a) It has increased by ten times.

(b) Late varieties are being taken up.

6. There is no frost in Bihar but white-ants damage the seeds and the loss is not less than ten per cent. If cane stands in the field for longer period an insect infests it giving red streak in the cane.

7-9. Can not answer.

10. It is in excess in Tirhut Division of Bihar and needs some restrictions.

11. Cost of cultivation of sugarcane (I am a cultivator) per bigha is as follows according to the present rates of labour in villages in any area (As. 4 per day per cooly and As. 4 per day per plough)—a bigha is equal to $\frac{1}{16}$ th of an acre:—

	Rs. A.
(1) Tamni-digging	5 0
(2) Ploughing and levelling 4 times before October	4 0
(8) Manure cost 20 carts cow-dung and transport	25 0
(4) Spreading of manure—	
(a) Cooly 4	1 0
(b) Ploughing	1 0
(5) Furrowing	1 0
(6) Seed (cost) 40 and transport	16 0
(7) Disinfecting seed with coal tar	2 0
(8) Planting 4 and levelling	1 8
(9) Weeding twice	4 0
(10) Tamni	2 0
(11) Earthing twice	1 8
	<hr/>
	64 0
(12) Rent for 2 years	10 0
	<hr/>
	74 0
(13) Reaping 500 maunds	10 0
(14) Cartage to mill 6 pies to 1 unna, average 9 pies, 20 maunds to a cart—25 carts at 15 annas a cart	23 7
	<hr/>
	107 7

If manure which is not always available to all be eliminated the cost would reduce as follows and production will reduce to 300 maunds:—

	Rs. A.
Manure and manuring	27 0
Reaping only 300 maunds	4 0
Carting 300 maunds	7 8
	<hr/> 38 8 <hr/>

	Per bigha. Rs. A.	Per acre. Rs. A.
Cost with manure, production 500 maunds	107 7	118 3
Cost without manuring production 300 maunds	68 15	75 13

12. The difficulties in my part are:—

- (1) Tiny fields.
- (2) Lack of manure.
- (3) Ignorance of its cultivation.
- (4) Lack of irrigation.
- (5) Lack of adequate capital to meet expenses of cultivation.
- (6) No return for 1½ years.
- (7) Immediate payment on sale not forthcoming.

Suggestions.

1. Cheaper chemical manure should be available near about and some one to direct its application and also to direct general method of cultivation of sugarcane. Mills or big contractors who enter into agreements do not advance more than Rs. 10 per bigha while cost of cultivation in the minimum is about Rs. 70. Payment of rent is compulsory while the family has to live on the yield of crop, and this is not forthcoming for a long time. Even when cane is sold, payment is made weekly or fortnightly and cultivator has to go long distance and spend a day or two to get these payments and wastes days on which he should be working, carts have to wait a long time at the weighbridge. Even Government rules and appointment of Cane Inspectors have not removed the difficulties entirely. The agreements entered into are one-sided. The suppliers can't sell elsewhere while the mill or contractor is not bound to pay damage for delay or not taking the supply. Well-to-do farmers only can cultivate under these conditions. Poor tenants cannot. Agreements should bind both sides equally, advances should approximate cost of cultivation in instalments at the time of different stages, *i.e.*, for general purpose for manure, for seeds, for payment of rent. There should be more weighbridges and payment should be, against each cart, available within an hour or two so that either cultivator or cart may not lose any time or miss a trip over receiving payment. The mills and contractors exhaust their own crops before they take bonded cane. Own cultivation being a known factor and bonded cane also a known factor, the daily intake should be in the same proportion of the two either by mill or by contractor.

13. (a) It is absolutely undesirable.

It be legalised provided mills earmark 55 per cent. of the capital for those who supply the land on lease. The whole profit of the industry under state help through rules, laws and duties should not remain with capitalists but should be shared by those cultivators and tenants who make these profits possible and must have a hand in the control.

(b) Formerly zones were in operation in Bihar by mutual arrangement amongst Sugar Factories till Government abolished them. They worked oppressively against the agriculturists. Factories or mill employees and big contractors working these zones brought in malpractice.

At the same time restriction on excessive production is necessary. This can be controlled through co-operative organisations of cane-growers and abolishing supply through other agencies.

15. (a) I am against it.

Fixation of quota of manufacture of sugar.

(b) Licensing of new factories or extension of existing factories will tend to keep the price of sugar up and effort to reduce cost of production would be lacking. The industry and cane-growers should be left a free hand and State should interfere only where there is danger of exterminating this national industry or exploitation of agriculturists. The objective should be to put the industry on safe footing without danger of being exterminated by foreign competition when protective duty is removed and also it should be able to export sugar to a great extent. This can only happen if cost of production be low and more sugar be produced than required in the country.

19. By cart cane gets to the factory from 1 to even 20 miles. At the utmost it reaches the weighbridge within 24 hours but weighbridge may take another 24 hours to weigh it. It is not protected during transport.

		Per maund.
		As. P.
20. Up to 4 miles	.	0 6
4 to 7 miles	.	0 9
7 to 20 miles	.	1 0

Mostly carts are hired, cost of hiring has been stated above.

30. Millowners ordinarily appoint agents or contractors on large scales who undertake to supply 5 to 10 lakhs of maunds of cane. When they enter into agreements with small cultivators, they given advance of Rs. 10 per bigha $\frac{1}{4}$ (th of an acre). In places mills supply seeds also and charge for it. These agreements are one-sided and advance carries interest.

31. See answer to Question 30. Millowners pay 6 pies per maund commission to agents.

32. Millowners deprecate supply by co-operative association of growers. They are afraid of too much official interference and check on underhand dealings or malpractices and vested interest of large planters or agents militates against its introduction.

33. Arrangements are defective. Carts have to wait at times 24 hours before weighment is made. Price is paid week to fortnight after and a small supplier has to waste a lot of time over receiving payments. Even agents or contractors pay when they receive payment from the mill. Advances in total are deducted first. At times cultivators are obliged to resort to bribing the employees.

38. Prices are fixed fortnightly by Government Sugar Committee. During the last season cultivators sold to unbonded agents at lower prices.

43. Agriculture Department should be able to warn the public against excessive or short supply of cane in September each year on the results of previous season so that cultivators may increase or decrease their cane crop or reduce or use the land for rabi crops.

Co-operative Department organises cane-growers' Societies only when mills agree to buy from these associations but such agency of supply should be forced on the mills.

(10) *Letter, dated the 25th June, 1937, from Mr. Parsahai Gupta, Bilari, United Provinces.*

ANSWERS TO QUESTIONNAIRE.

Raw Materials.

10. I am a grower. I was not required to purchase land as I am a Zamidar.

11. (a) The total area of my farms is 1,000 acres but I began with 100 acres in 1924. Most of the area has been increased since 1932.

12. (b) From about one-third to half.

(c) At present I have got the following varieties at farms:—

Co. 213, Co. 300, Co. 303, Co. 313, Co. 290, C.S. 5, C.S. 19, Co. 350, Co. 356, Co. 370, Co. 375, Co. 385 and Co. 312.

(d) The whole area is being managed with bullock power and improved implements. For irrigation I have got seven electric driven tubewells of my own. Fallow and rotation go hand in hand. Till 1932-33, I was also growing wheat and my rotation of crops was sugarcane after green manuring; after cutting sugarcane generally by the 15th of April the land was left fallow till the break of monsoon when ploughing for wheat was done. These ploughings were continued as times and rains allowed till the sowing of wheat. After reaping wheat, land was again left fallow till the break of monsoon when Sanai seed was sown for green manuring. The whole crop of Sanai was ploughed down to bury in the furrows so that by the end of monsoon field may be ready to receive first ploughing. These ploughings were continued as necessary till cane was sown either after irrigation if necessary. But since 1933-34, the following rotation has been followed:—

Sugarcane, ratoon, fallow, green manuring and then sugarcane.

It may be mentioned here that I never allowed full plant crop to go to ratoon. Special attention is paid to certain area which is meant to be kept under ratoon. In some cases second ratoon is allowed then the results of the first ratoon crop are found encouraging. As regards manuring, I apply all the farmyard manure and supplement it with castor-cake and ammonium sulphate.

(e) It is not possible for me to give yield variety wise as I never keep any record on that basis but I can say from my personal experience that yield very much varies with the amount of care that you devote in its cultivation. Under similar good conditions of cultivation Cos. 313, 331, 290, 356, 300 and C.S. 5 have given a yield of over 1,000 maunds per acre in trench area (cane shown in trenches). I have no idea of the comparative sucrose contents of various varieties but I know under good cultivation even bad canes give good results.

(f) The following are the figures of Bilari Sahaspur Court of Wards Farm where detailed accounts are kept:—

Figures for the year 1935-36. Area 47-31 acres.

	Rs.	A.	P.
(1) Cultivation charges	258	11	6
(2) Cost of manure and manuring	1,043	8	3
(3) Cost of seed and sowing	751	10	0
(4) Irrigation	881	12	0
(5) Hoeing and earthing	453	5	0
Carried over	3,388	14	9

	Rs.	A.	P.
Brought forward	3,388	14	9
(6) Rent	946	3	0
(7) Harvesting	37	5	6
(8) Carting	221	14	9
(9) Overhead charges	344	10	0
(10) Other expenses	85	3	3
(11) Depreciation charges on bullocks, building and tubewell	750	0	0
Total	5,764	3	3

Cost of cane per maund delivered at the weighing centre As. 4-5; the cost of cultivation per acre is Rs. 122.

19. The area in 1936-37 has been the highest and in the district of Moradabad some cane has been left unsold and uncrushed which is standing till to-day. But I do not think any restrictions are necessary because in such parts area under sugarcane is bound to decrease. This season has taught a good lesson to the grower as besides prices, they had to undergo good deal of hardship in the attempt to dispose of their cane. In some cases they had to wait for such a long period at the purchasing centre that the cartage charges outweighed the price of cane. Besides, if the grower were not extended hopes of purchase by setting up weighbridges at the various railway stations, he would have tried to manage his crop himself. At the fag end of the season there was no swifter method left for him for the disposal of his crop than to sell it for whatever he got. The area round the factories is bound to increase.

20. These figures will follow soon.

21. The difficulties of the small grower have been:—

- (a) Insufficient supply of fertilisers.
- (b) Want of proper system of irrigation.
- (c) Right choice of seed.

Besides these all that is necessary the grower puts in with the dint of his labour. As regards fertilisers, Irrigation and Agricultural Departments have begun distribution of some mixture of some kind of cake and ammonium sulphate. This is a good beginning but in order to bring down its cost it is necessary that the use of indigenous manures such as bones, potassium nitrate, nitre earth, etc., should be investigated and popularised.

Canals and tubewell system provide irrigation. Rates in the tubewell areas are being raised and that tendency should stop. Besides, cheaper rates should be arranged to popularise green manuring. In the interest of improvement of quality, it is necessary that small demonstration farms should be multiplied and right quality of cane should be distributed for seed.

As regards the delivery of cane to the factories, the chief difficulty is that of weighing. It is here that a grower mostly suffers. I think it can only be improved by strict vigilance and enforcement of parcha system. At the factory gate specially approaches should be improved and water arrangements made.

48. The enforcement of fixed price was made in 1934. The basic price aimed at was a compromise and was fixed at 5 annas a maund when the price of sugar be between Rs. 8 and Rs. 9 to increase or decrease by 3 pies for every 8 annas of increase or decrease in the average price of

sugar above or below Rs. 8-8 per maund. In fixing this scale, the fact that excise duty was levied at As. 15-6 a maund was taken into consideration, the intention being that minimum price of cane be 5 annas a maund when the basic price of sugar (*i.e.*, market price *minus* the excise duty) was between Rs. 7 and Rs. 8 per maund. In arriving at this decision the fact that at the beginning of crushing season sugar prices will average higher and consequently cane prices, and also at the fag end of the cane season owing to shortage of cane, competition would raise the price of cane, was not lost sight of. This did actually happen in the years 1934-35 and 1935-36. But since then the prices of sugar have gone down, area under sugarcane has increased and the miller has also learnt the art of evading competition, the grower does not get the benefit of any of these expected advantages so much as that in the last cane season the grower was very much hit and at places had to agree to accept a price below the minimum. This is not all. Excise duty was enhanced by the Government of India in the hope that its incidence would fall on the consumer as sugar prices will comparatively rise but experience has shown that it has come to be borne by the grower. Hence while the advantages have disappeared, the basic price remains the same. The result is that with cheap cane, cheap sugar is produced and it reacts more upon the grower, as while the miller can count his profits in a few figures, the grower can only count in rupees, annas and pias. I shall propose that, under the circumstances, while keeping the basic formula as suggested by the United Provinces Government in tact, a price should be fixed below which the price of cane should not go and that should not be less than annas four.

(11) *Answers to the General Questionnaire by Sardar Vivek Singh, Sardarnagar, United Provinces.*

10. Yes. I am a Zemindar and cultivate my own farms.

11. (a) 425 acres (under my own cultivation).

(b) 191 acres.

(c) Co. 213, 214, 290, 331, 205, 356.

Ek. 28.

P.O.J. 2878.

(d) The following rotation of crops was followed and found suitable to the locality and soil:—

Sugarcane, fallow, wheat, rice, gram, fallow.

In the last few years however this rotation has been dropped owing to the slump in grain prices. Cane ratooning was taken up as an alternative to the above rotation.

Castor-cake, neem-cake, bone meal, green manure (san hemp), farm-yard manure and sulphate of ammonia have all been used on the farm.

Farm-yard manure in conjunction with sulphate of ammonia have given us the best results. Unfortunately farm-yard manure is not available in sufficiently large quantities.

Castor oil cake is not to be had with a uniform nitrogen content. When bought in large quantities it is sent mixed with floor sweepings.

Neem cake is expensive considering its nitrogen contents as compared to chemical manures. We use it as a measure of protection against white ants. For this it is excellent.

San hemp has given us varying results.

Sulphate of ammonia has given us by far the best results.

(f) *Sugarcane Statement for Dumri and Dudhai Farms.*

Farm.	Fasli.	Area planted.	Yield Total.	Average per acre.	Cost.	
					Per Acre.	Per Maund of Cane.
		Acres.	Mds. Srs.	Mds. Srs.	Rs. a. p.	As. p.
Dudhai . .	1342	80	61,911 10	773 35	147 1 1	3 0-64
Dumri . .	1342	97	54,520 20	562 02	129 4 5½	3 8-16
Dudhai . .	1343	105	71,654 30	682 17	139 11 1	3 3-33
Dumri . .	1343	97	67,006 20	690 31	148 3 5½	3 5-12
Dudhai . .	1344	84	68,203 10	811 37	177 5 9½	3 5-04
Dumri . .	1344	110	68,248 20	620 17	138 11 3	3 6-92

Average cost of cane per maund taken over a period of three years for two farms comes to As. 3-5-02.

12. (a) A few acres of new varieties are planted each year.

(b) We sold a great deal of seed some years ago but now Co. 213 is found everywhere.

15. Damage by frost is negligible in this district. Red rot and Borers do a fair amount of damage but it is difficult to assess the exact damage. Again this varies in different years.

21. The main difficulties of cane-growers are lack of capital, lack of irrigation facilities, lack of manure and fragmentation of holdings.

The only solution is collective farming with State aid. Each Collective Farm to be of a thousand acres or more. Cultivators to be given Bonds. Each Bond being of a different value according to the extent of the holding in proportion to the Farm. A committee of cultivators to run the farm under the direction of the zemindar or an official of the Agricultural Department. Preferably under the direction of both. The cultivators to be encouraged to work on the farms but under a system of wages. Farm profits to go to the cultivators in the form of dividends to be declared at the end of each year.

Cartage is a serious difficulty and should be overcome by a network of tramways. This is a matter which the factories should be enforced to take up.

22. (a) It is not widely known that some ten years back a great deal of land was available in parts of this Province for sugarcane farming. Part of this was for sale at a low initial cost and the remainder was offered on long lease at reasonable rental. These tracts were particularly suitable for the cultivation of cane. The only drawback being their inaccessibility by rail. This in most cases amounted to only a few miles.

Now generally speaking the areas directly bordering on rail communications are not the most suitable for cane farming. Special considerations favour areas that lie along rivers and only extend a few miles on each side. Or those that lie in the Nepal Terai Belt.

It should be clear to anyone familiar with the vagaries of Indian rivers that railway run at a considerable distance away from river beds so as not to be at the mercy of their changing moods. This explains why

these areas are at some distance from railheads. The Nepal Terai Belt is fever bound and is only now coming into cultivation. This process is proving rapid on account of the pressure of population and its extreme fertility.

The very substantial protection afforded to the industry was on account of its infancy and it was found necessary to protect it against competition from Java and to allow it to develop on sound foundations. If this had been correctly appreciated then it follows that factories should have been so situated as to command farm lands. Instead of which a mushroom growth has sprung up in the most densely populated areas. These areas were already under sugarcane and therefore easy profits were assured for investments in sugar. The study of Sugar Factory Balance Sheets of a few years ago reveals the payment of astounding dividends.

Now to build the industry on sound foundations would have required more money and more time. Also the idea prevailed that the hazards of agriculture should be left to the poor cultivator. The ravages of pests and adverse agricultural conditions are his heritage, handed down through centuries of mute acceptance.

The gradual disappearance of huge monopoly profits has now opened the eyes of the industrialists to the realities of the situation and to their own blunders. Also a scape goat had to be found. Hence comes the cry that sugar is made in the fields and that the cultivator is not intelligent enough to produce good cane. They do not pause to consider as to why the yield is not comparable to that of Java and the other sugar producing countries. Lack of irrigation, lack of manure and lack of other farming facilities. Also the climate of Java is superb for the production of cane. We can never hope to touch the yields of Java and Cuba but we can certainly double the present Indian yield. The remedy lies in collective farming.

29. It is difficult to lay down hard and fast rules. Cost of cartage depends on mileage *plus* the time factor. On my two farms I have to pay 6 pies per maund of cane although one farm is under a mile from the factory while the other is over two miles away.

A few of the cultivators have their own carts but mostly carts are hired.

Enclosure.

DUMRI FARM—AREA 225 ACRES.

Expenditure on Sugarcane, 13½ Faslī.

	Acres.
Area planted	47
1st Ratoon	50
Total	97

Details.	Amount.	Remarks.
	Rs. A. P.	
Trenching, 47 acres at Rs. 11 per acre	517 0 0	
Manure, Sulphate of Ammonia 16 tons at Rs. 110-7-6 per ton	1,767 8 0	
Cane seed 1,600 maunds at As. 6 per maund	600 0 0	
To cost of irrigation, Crude oil 625 gallons at As. 8-3 per gallon and Mobil oil 179 gallons at Rs. 2-2 per gallon	702 10 3	

Details.	Amount.	Remarks.
	Rs. A. P.	
Labour (Excluding cost of trenching) .	1,851 12 9	
Cartage 52,920 maunds 20 seers at 6 pies per maund	1,653 12 3	
To cost of harvesting and stripping cane 1,111 maunds 10 seers at 6 pies per maund	34 11 6	
Rent	1,164 0 0	
Farm salaries	1,572 0 0	Refer to sheet No. 4.
To cost of oil cake for bullocks	525 0 0	Refer to sheet No. 5.
Interest on Capital Outlay	2,151 12 0	Refer to sheet No. 6.
Total	12,540 2 9	

	Mds. Srs.
Total Yield	54,520 20
Yield per acre	562 2

	Rs. A. P.
Cost per acre	129 4 5½
Cost per maund of Cane	0 8 8 ¹⁰ / ₁₀₀

DUDHAI FARM—TOTAL AREA 200 ACRES.

Expenditure on Sugarcane for 1342 Fasli.

	Acres.
Area planted	45
1st Ratoon	35
Total	80

Details.	Amount.	Remarks.
	Rs. A. P.	
Trenching 45 acres at Rs. 10 per acre	450 0 0	
To cost of manure—Sulphate of Ammonia 10½ tons at Rs. 110-7-6 per ton	1,226 12 6	
To cost of Cane seed 1,600 maunds at As. 6 per maund	600 0 0	
To cost of irrigation by Tubewell—Crude oil 1,405 gallons at As. 8-3 and Mobil oil 214 gallons at Rs. 2-2 per gallon	1,179 4 3	
Labour (Excluding cost of trenching) .	1,407 6 3	
Cartage to Sugar Factory 60,311 maunds 10 seers at 6 pies per maund	1,884 11 6	Distance about 2 miles.
To cost of harvesting and stripping cane 3,097 maunds at 6 pies per maund	96 12 6	Free labour for this operation is not available after the 1st of March.

Details.	Amount.	Remarks.
	Rs. A. P.	
Rent	960 0 0	
Farm salaries	1,764 0 0	3/4 of the actual pay bill is charged to cane. Refer to pay bill sheet No. 1.
To cost of oil cake for bullocks	525 0 0	1/2 of actual costs are charged to cane. Refer to sheet No. 2.
Interest at 10 per cent. on capital invested in Tubewell and pucca channels	1,721 8 0	Refer to sheet No. 3.
Total	11,815 7 0	

	Mds. Srs.
Total Yield	61,911 10
Yield per acre	773 35

	Rs. A. P.
Cost per acre	147 11 1
Cost per maund of Cane	0 3 10 1/2

DUDHAI FARM—AREA 200 ACRES.

Expenditure on Sugarcane, 1343 Fali.

	Acres.
Area planted	40
1st Ratoon	45
2nd Ratoon	20
Total	105

Details.	Amount.	Remarks.
	Rs. A. P.	
Trenching 40 acres at Rs. 10 per acre	400 0 0	
Manure Sulphate of Ammonia, 15 1/2 tons at Rs. 110-7-6 per ton	1,668 1 3	
Cane seed, 1,500 maunds at Rs. 6 per maund	562 8 0	
To cost of irrigation, 1,803 gallons Crude oil at As. 8-3 and Mobil oil 348 gallons at Rs. 2-2 per gallon	1,669 6 9	
Labour (Excluding cost of trenching)	1,692 15 3	
Cartage to Factory, 70,154 maunds 30 seers at 6 pies per maund	2,192 5 3	
To cost of harvesting and stripping 38,782 maunds at 6 pies per maund	1,211 15 0	
Rent	1,260 0 0	
Farm salaries	1,764 0 0	Refer to sheet No. 1.
To cost of Oil Cake for Bullocks	525 0 0	Refer to sheet No. 2.
Interest on Capital Outlay	1,721 8 0	Refer to sheet No. 3.
Total	14,667 11 6	

	Mds.	Srs.
Total Yield	71,654	30
Yield per acre	682	17
	Rs.	A. P.
Cost per acre	139	11 1
Cost per maund of Cane	0	3 3 $\frac{1}{10}$

DUMRI FARM—AREA 225 ACRES.

Expenditure on Sugarcane, 1343 Fasli.

	Acres.
Area planted	50
1st Ratoon	47
	—
Total	97
	—

Details.	Amount.	Remarks.
	Rs. A. P.	
Trenching 50 acres at Rs. 10 per acre .	500 0 0	
Manure, Sulphate of Ammonia 14 $\frac{1}{2}$ tons at Rs. 110-7-6 per ton . . .	1,601 12 9	
Cane seed 1,700 maunds at 6 pies per maund	637 8 0	
To cost of irrigation Crude oil 1,219 $\frac{1}{2}$ gallons at As. 8-3, Mobil oil 240 gallons at Rs. 2-2 per gallon .	1,138 12 9	
Labour (Excluding cost of trenching) .	1,994 14 6	
Cartage, 65,306 maunds 20 seers at 6 pies per maund	2,040 13 3	
To cost of harvesting and stripping cane, 33,615 maunds 10 seers at 6 pies per maund	1,050 7 6	
Rent	1,164 0 0	
Farm salaries	1,572 0 0	Refer to sheet No. 4.
To cost of Oil Cake for Bullocks .	525 0 0	Refer to sheet No. 5.
Interest on Capital Outlay	2,151 12 0	Refer to sheet No. 6.
Total	14,377 0 9	

	Mds.	Srs.
Total Yield	67,006	20
Yield per acre	690	31
	Rs.	A. P.
Cost per acre	148	3 5 $\frac{1}{2}$
Cost per maund of Cane	0	3 5 $\frac{1}{100}$

DUMRI FARM—AREA 225 ACRES.

Expenditure on Sugarcane, 1344 Fash.

	Acres.
Area planted	60
1st Ratoon	50
	<hr/>
Total	110
	<hr/>

Details.	Amount.	Remarks.
	Rs. A. P.	
Trenching 60 acres at Rs. 11 per acre .	660 0 0	
Manure, Sulphate of Ammonia 20 tons at Rs. 110-7-6 per ton . .	2,209 4 0	
To cost of irrigation Crude oil 917 gallons at As. 6-3, Mobil oil, 179½ gallons at Rs. 1-15-3 per gallon .	715 0 0	
Labour (Excluding cost of trenching) .	2,243 7 6	
Cartage, 66,548 maunds at 6 pies per maund	2,079 10 0	
To cost of harvesting and stripping Cane 36,602 maunds 10 seers at 6 pies per maund	1,143 13 0	
Cane seed, 1,700 maunds at As. 6 per maund	637 8 0	
Rent	1,320 0 0	
Farm salaries	1,572 0 0	Refer to sheet No. 4.
To cost of Oil Cake for Bullocks .	525 0 0	Refer to sheet No. 5.
Interest on Capital Outlay	2,151 12 0	Refer to sheet No. 6.
Total	15,257 6 6	

	Mds. Srs.
Total Yield	68,248 20
Yield per acre	620 17

	Rs. A. P.
Cost per acre	138 11 3
Cost per maund of Cane	0 8 7

DUDHAI FARM—AREA 200 ACRES.

Expenditure on Sugarcane, 1344 Fash.

	Acres.
Area planted	44
1st Ratoon	40
	<hr/>
Total	84
	<hr/>

Details.	Amount.	Remarks.
	Rs. A. P.	
Trenching 44 acres at Rs. 10 per acre .	440 0 0	
Manure, Sulphate of Ammonia, 14 $\frac{7}{10}$ at Rs. 110-7-6 per maund .	1,557 9 9	
Neem Cake, 400 maunds at Rs. 2-4-3 per maund	906 4 0	
Cane seed, 1,700 maunds at As. 6 per maund	637 8 0	
To cost of irrigation, Crude oil 1,754 gallons at As. 8-3 and Mobil oil 341 gallons at Rs. 1-15-3 per gallon .	1,570 5 3	
Labour (Excluding cost of trenching) .	1,603 13 3	
Cartage, 66,503 maunds 10 seers at 6 pies per maund	2,078 3 0	
To cost of harvesting and stripping, 34,761 maunds at 6 pies per maund .	1,086 4 6	
Rent	1,008 0 0	
Farm salaries	1,764 0 0	Refer to sheet No. 1.
To cost of Oil Cake for Bullocks .	225 0 0	Refer to sheet No. 2.
Interest on Capital Outlay	1,721 8 0	Refer to sheet No. 3.
Total	14,898 7 9	

	Mds. Srs.
Total Yield	68,203 10
Yield per acre	811 37
	Rs. A. P.
Cost per acre	177 5 9 $\frac{1}{2}$
Cost per maund of Cane	0 3 6

Dudhai Farm.

Salaries.

	Rs.
<i>Sheet No. 1—</i>	
11 Ploughmen at Rs. 6 per month	858
5 Overseers at Rs. 7 per month	420
2 Fitters for Tubewell at Rs. 7 per month , .	168
1 Supervisor at Rs. 40 per month	480
1 Munshi at Rs. 10 per month	120
1 Manager at Rs. 40 per month	480*
1 Storekeeper at Rs. 10 per month	120
Total for the year	2,646

NOTE.—It will be seen that only $\frac{2}{3}$ of the above amount is charged to cane.

* This man is joint for the two farms and draws Rs. 80 per month.

Dudhai Farm.

Up-keep of Bullocks.

Rs.

Sheet No. 2—

20 Bullocks are given 35 maunds of oil cake per
month at Rs. 2-8 per maund 1,050

Total for the year 1,050

NOTE.—Only $\frac{1}{3}$ of the amount is charged to cane expenses.

Dudhai Farm.

Capital Outlay.

Rs.

Sheet No. 3—

To cost of 2,600 feet of pucca channel at As. 14
per foot 2,275

To cost of Engine House 2,000

To cost of Engine and Tubewell 12,940

Total amount 17,215

NOTE.—10 per cent. of the above amount is charged yearly to cane account,

Dumri Farm.

Salaries.

Rs.

Sheet No. 4—

11 Ploughmen at Rs. 6-8 per month each 858

2 Overseers at Rs. 8 per month each 192

2 Overseers at Rs. 6 per month each 144

1 Fitter for Tubewell at Rs. 9 per month 108

1 Fitter for Tubewell at Rs. 10 per month 120

1 Supervisor at Rs. 20 per month 240

1 Munshi at Rs. 8 per month 96

1 Storekeeper at Rs. 10 per month 120

1 Manager at Rs. 40 per month 480*

Total for the year 2,358

* This man acts as Manager for both farms and actually gets Rs. 80 per month.

NOTE.—Only $\frac{1}{3}$ of the above amount is charged to cane.

Dumri Farm.

Up-keep of Bullocks.

Rs.

Sheet No. 5—

20 Bullocks are given 35 maunds of oil cake per
month at Rs. 2-8 per maund 1,050

Total for the year 1,050

NOTE.—Only $\frac{1}{3}$ of the above amount is debited to cane account.

(d) A summer fall followed by sugarcane with no manure.

(e) This area depends entirely on rain and average yield from Coimbatore varieties without any manure is about three hundred maunds to the acre sucrose content from 10 to 12 per cent.

(f) The cost of cultivation in the Punjab:—

	Rs. A. P.
(i) Preparatory tillage and sowing—	
7 Men	1 15 6
7 Pairs of Bullocks	8 12 0
Extra labour for preparation of seed and sowing	3 8 0
(ii) Inter-culture	8 8 0
(iii) Manure	10 0 0
(iv) Seed	18 0 0
(v) Rental value (including Land Revenue and other cesses)	30 0 0*
(vi) Water	85 0 0†
(vii) Miscellaneous	10 0 0
Total	<u>175 11 6</u>

Taking 420 maunds as the yield it gives—

	As. P.
Cost of production one maund of cane	6 9
Add cost of harvesting per maund	0 6
Add cost of stripping per maund average	0 6
Total cost per maund	<u>7 9</u>

The cost of production in United Provinces is as follows:—

	Rs. A. P.
<i>Ploughing and preparation—</i>	
(1) Two ploughing by Desi plough for sowing Sanai (2 men and 2 pairs of bullocks for 1 day). Bullocks at Rs. 1-12 per pair per day and 1 man at As. 5 per day	4 2 0
(2) Ploughing in of Sanai by soil turning plough (6 men and 1 pair of bullock for 1 day)	3 10 0
(3) 15 ploughings by Desi plough (15 men and 15 pairs of bullocks for 1 day)	30 15 0
(4) 12 ploughings (3 men and 3 pair of bullocks for 1 day)	6 3 0
(5) 15 maunds of castor cake at Rs. 1-4 per maund	18 12 0
(6) 4 men for spreading manure	1 4 0
(7) One maund Sanai seed at Rs. 3 per maund	3 0 0

* If land is got on batai, the charge is more than $1\frac{1}{2}$ times of this figure.

† It takes about $2\frac{1}{2}$ days to irrigate an acre once. These charges include interest and depreciation on the value of Persian Wheels and wells also.

Dumri Farm.	Capital Outlay.
	Rs.
<i>Sheet No. 6—</i>	
To cost of 3,700 feet of pucca channel at As. 14 per foot	3,237-8
To cost of Engine House	1,000
To cost of Engine and Tubewell	17,280
Total amount	<u>21,517-8</u>

NOTE.—10 per cent. of the above amount is charged yearly to cane.

(12) *Letter from Sardar Sir Jogendra Singh, Kt., Simla.*

I am enclosing herewith my answer to the Questionnaire and also a cutting of an article I wrote giving my views. If you wish to examine me, I shall be glad to be examined.

The strongest ground for protection of Sugar Industry is to safeguard the interests of hundreds and thousands of Cane-growers. Sugarcane is the only money crop which the cultivator grows. In England and America Government have taken direct action in improving and stabilizing the price of agricultural produce.

In India on the other hand prices have been allowed to slump to such an extent that the burden of taxation and debt is weighing down the agriculturist.

It was hoped that a minimum price for cane will give some margin of profit to the cane-growers and prices will not be allowed to go below a fixed minimum. In United Provinces the interests of Cane-growers were entirely sacrificed and price went down below production costs.

It is essential that the price of sugar should be stabilized in the neighbourhood of Ten rupees a maund and minimum price allowed for sugarcane should be at least Annas six a maund, as recommended by the Indian Sugar Committee.

The cash price of six annas a maund should be subject to variation in accordance with the recovery of sugar of each factory. The basic price should be a share in sugar and it should not be less than half sugar produced by any factory, though in some countries it is as much as 80 per cent. The Indian Sugar Committee recommended that it should be half the yields and there is no reason why this recommendation should not be enforced. It is a practice which prevails in Cuba and even in Java. A sugar factory with a recovery of about 11 maunds of sugar from one hundred maunds of cane should give a minimum of $5\frac{1}{2}$ maunds of sugar to the cane-grower, which at 10 rupees a maund would entitle the cane-grower to As. 8-9 $\frac{1}{2}$ a maund. The factory could pay in sugar or in cash at the market price at which it is selling its sugar from week to week. The cane-grower, however, should be further entitled if the average price for the year exceeds the rate at which he has been paid. The practice in United Provinces of taking average yield of all the factories and average price of good and bad sugar should be abandoned. Each factory should pay on its own recovery of sugar and on the price realised.

Raw Materials.

10. Yes. I have my own land.
11. (a) Thousand acres.
- (b) Three hundred acres.
- (c) Two hundred and thirteen acres.

	Rs. A. P.
<i>Planting Cane—</i>	
(8) Seed cane 45 maunds at As. 5 per maund (planted 3½ feet apart)	14 1 0
(9) Planting of cane (6 men per acre per day) at As. 5 per man per day	1 14 0
<i>Irrigation—</i>	
(10) Canal dues	4 0 0
(11) Five irrigations (70 units of electricity) including palewa irrigation	7 10 6
(12) Labour required for irrigation (10 men for 1 day)	3 2 0
(13) One skilled man required for 2 days at Re. 1 per day	2 0 0
<i>Hoeing and Interculture—</i>	
(14) 4 hoeings one after each irrigation (the first irrigation is for Palewa and is followed by ploughing). 7 men at each hoeing; 28 men at As. 5 per day for 1 day	8 12 0
(15) 6 hoeings substantially (2 hoeings from plant- ing to germination and the remaining after each irrigation) 5 men at each hoeing—30 men for 1 day at As. 5 per man per day. Subsequent hoeing requires 2 men less as it is easier	9 6 0
(16) Earthing by 14 men in 1 day at As. 5 per man per day	4 6 0
(17) Land rent per acre	10 0 0
Miscellaneous charges	14 0 0
Depreciation	10 0 0
	<hr/>
	157 1 6
Supervision charges at 10 per cent. on Rs. 157	15 11 0
	<hr/>
Total	172 12 6

Expected yield 600 maunds per acre.

Taking 600 maunds as the yield it gives—

	As. P.
Cost of production of 1 maund of cane	4 7
Add cost of harvesting per maund	0 6
Add cost of stripping per maund	0 6
Add cost of Carriage	0 6
	<hr/>
Total cost one maund	6 1

12. (a) Ten acres for trying out new seeds of new varieties of cane.

(b) Seed is distributed from the large area grown.

13. I have made no experiment

14. (a) The quantity of cane available has increased with the increase in area and increase in yields.

(b) The quantity of cane has improved with introduction of new varieties.

15. The loss depends upon year to year. I had known a whole crop suffer in a year.

17. The governing factor fixing the price of cane is a price of Gur. But the fall in the price of sugar reacts on the price of Gur. If sugar were imported from outside on cheap rates, the sugar industry will be practically dead.

19. The question seems irrelevant from the point of view of rural economics. The larger area under sugarcane, the better. The limit of consumption in India has not been reached. No restrictions are necessary except that a factory should be bound to take the cane in its neighbourhood and contract for taking out the whole crop within the zone.

20. See 11 (f).

21. From the agriculture point of view the main difficulties are the supply of adequate water and manure.

22. (a) & (b) Cane supply is available and the question does not arise.

23. If zones system is introduced with a fixed area, under cane, for each factory and the minimum price for sugarcane was fixed, the factories could be depended on to supply seed and manure.

24. (a), (b) (1) & (2) No.

My reasons are that these matters may better be regulated by automatic operation of the rules of supply and demand.

29. Cane is generally transported by the cane-grower on his own bullock-cart. The average cost for hiring in my neighbourhood is about 2 pice per maund per mile.

44. The United Provinces Government has let itself into a ridiculous position, doing away with the minimum price and fixing it on the average yield of all the factories and at average price at Cawnpore. There are 67 factories working in United Provinces and at least 16 factories out of these have a recovery of about 10 per cent. and yet taking into account the inefficient factories, the average is reduced to 8 per cent. Each factory should pay on its own yield.

45. The price of sugar has reacted adversely on the price of Gur. I have not got the figures with me but there has been a serious fall in the price of Gur since the factories began to operate. This should be arrested.

46. I do not consider the basis on which prices are fixed, as satisfactory. The minimum price should be fixed on the basis of half sugar produced by each factory and not on the average production of all the factories.

49. There should be a bonus payment if the recovery is higher than the basis, on which half share was fixed and if the price realized over the whole season is greater than at which the commuted price was paid to the cane-grower.

52. No answer.

(13) *List of Answers to the Questionnaire submitted by Venkataraman of Vedurapaka, No. 23, Rama Chandrapur Sq., Madras.*

1. to 9. Nil.

10. Yes; I do not purchase the land, but take it on lease at Rs. 100 to Rs. 120 per acre. There is no difficulty in obtaining the land on lease.

11. (a) 40 acres.

(b) 5 to 6 acres.

(c) Purple Mauritius only.

(d) Once in 5 years sugarcane is cultivated. A ratoon also is invariably taken. Generally 3 years rest is taken. During which period paddy is continuously cultivated. Generally 15 bags castor cake per acre was applied in 2 detached doses, $\frac{1}{2}$ quantity during July and the rest in September, 1 bag 164 lbs.

(e) About 16 to 18 candies of jaggery per acre from the main planted crop and 12 to 15 candies from the ratoon crop, 1 candy is 500 lbs.

(f) The cost of cultivation per acre—

	Rs.
(1) Preparatory cultivation per acre	10
(2) Seeds and sowing	10
(3) Trenching and manuring	70
(4) Wrapping and propping with cost of Bamboos 5,000 per acre	80
(5) Irrigation	35
(6) Harvesting, stripping and manufacture of Jaggery	65
Total	270

12. (a) Nil.

(b) Generally no ryot will purchase seed from another ryot. Only tops are used for seed material which are cut and stored while crushing is going on.

13. There is no necessity to try early varieties. Hence late varieties are alone tried. As regards different varieties introduced by the Agricultural Department at present Purple Mauritius alone has been giving good tonnage in spite of its diseases. The Department has introduced J. 247, P.O.J. 2878, Co. 419 and Co. 413. They are under trial and trust.

14. There is no change in quality and quantity as we prepare Jaggery.

15. The loss by the diseases and pests can be ignored.

16. to 19. Nil.

20. About 16 to 18 candies of Jaggery per acre from the main planted crop and 12 to 15 candies from ratoon crop.

The cost of cultivation per acre—

	Rs.
Preparatory cultivation	10
Seeds and sowing	10
Trenching and manuring	70
Wrapping and propping with bamboos 5,000 per acre .	80
Irrigation	35
Harvesting, stripping and manufacture of Jaggery .	65
Total	270

(14) *Letter, dated the 17th June, 1937, from M. R. Ry., V. K. Ramaswamy Mudaliar Ayl., Zamindar of Cheyur (viâ) Madurantakam, Madras (S. I. Ry.).*

I have the honour to acknowledge the receipt of a copy of the general questionnaire on production of sugar, from the Deputy Director of Agriculture, St. Thomas Mount. I am a Landlord and I cultivate sugarcane and convert the same into jaggery and hence I can only reply the following questions, viz., production of Raw Materials.

10. Yes. I cultivate sugarcane on my own lands and hence, I find no difficulty in cultivating sugarcane.

11. (a) 536-42 acres.

(b) Average four acres.

(c) Fiji B; Co. II 81; P.O.J. 2878.

(d) The sugarcane follows paddy crop planted in the months of March and April and it comes to harvest in March next and afterwards a green manure crop followed by paddy is cultivated for three seasons, the sugarcane is again cultivated in the field. Sometimes, if there is no green manure crop before a paddy crop, the lands are fallow or a crop like Ragi or gingelly or groundnut is raised.

(e) The average yield of sugarcane per acre for Fiji B varies from 17 to 19 tons per acre.

Co. II 81—19 to 20 tons.

P.O.J. 2878—19 to 20 tons.

The latter two canes mature about 20 to 30 days earlier.

(f) The average cost of sugarcane cultivation per acre comes to Rs. 160 to Rs. 190.

12. (a) I don't conduct any experiment in cane cultivation.

(b) No special cultivation is made for productions of seeds and I get my requirements from my own crop.

13. I am cultivating Co. II 81 and P.O.J. 2878, which mature earlier by one month than the Fiji B cane, which is the variety largely grown in this tract.

I use labour saving implements suggested by the Department for ploughing and making trenches. In manuring, I follow the advice of the Department in the use of oil-cake and Sulphate of Ammonia. As regards manufacture of sugar, I have Sindewabe furnaces for boiling sugarcane juice and making jaggery. As regards any insect pest appearing in the crop, I get all the help required from the Department.

14. Nil.

15. The crops in early stages are attacked by stem borer and sometimes by white ants. The percentage of loss will come to 6 per cent. to 8 per cent.

16-19. Nil.

20. The average yield of sugarcane per acre is 17 tons and cost is about Rs. 160.

21. The scarcity of water for irrigating the crop in its early stages; the disposal of jaggery; these are the two difficulties.

As I am not producing sugars on factory scale, I have no answer on the other points raised in the questionnaire.

(15) *Replics to the General Questionnaire, from Mr. T. S. Ramaswamy Aiyer, L. Ag., Landlord, Asakalathur, Kallakurichi (Dn.), S. Arcot Dt., Madras.*

10. Yes, I do cultivate sugarcane every year since 1920. Generally I raise crop only in my own outright purchased lands and in one or two years I cultivated in leased lands also. Stipulated conditions of lease, high rate of lease amount and compulsory raising of a paddy crop after sugarcane all these conditions minimise the little profit, one is likely to get.

11. (a) The area under sugarcane in Kallakurichi Tq., S. Arcot Dt., is increasing in leaps and bounds and there was overproduction in the year 1936-37. The abnormal fall in price of jaggery and the poor turn again brought the area of cultivation this year to almost normal acreages. Statistics from 1920 to 1937 will clearly show the accuracy of the above statement.

(b) Refer to the Statistics of cane in Kallakurichi Taluq.

(c) Original cane is white reed cane. After the introduction and propaganda by the Agriculture Department the improved strains like Fiji B, Java 247, B 208, Co. 214, Co. 281, P.O.J. and other varieties are grown now-a-days.

(d) Very rarely sugarcane is raised in a fallow land in these parts. After paddy sugarcane is generally raised paddy and sugarcane are the general rotation. Manures generally applied are bulky organic manures like cattle manure, sheep penning, pig manure, and oilcakes like groundnut cake and castor cake. Very few well-to-do ryots apply chemical manures in conjunction with bulky organic manures.

(e) Average yield per acre is 15 to 20 pothies (250 lbs. per pothie); Fiji B, P.O.J. varieties give very nearly 20 to 22 pothies and acreful. Cultivator gets even 25 pothies under very favourable conditions. The sucrose contents range from 17 to 20 per cent. according to the treatment of manure given by the cultivator. Other varieties give 19½ to 20 pothies and the reed canes give 12 to 15 pothies. The sucrose contents generally in all improved varieties 15 to 17 per cent. Reed cane sucrose contents 10 to 12 per cent.

(f) Cost of cultivation of sugarcane in one acre—

	Rs. A.
<i>Preliminary Cultivation—</i>	
Ploughing or digging trenches till good teeth is formed	20 0
Seed cane 20,000 to 25,000 at Rs. 2 per 1,000 sets	40 0
Broadcasting of seed and planting	5 0
<i>After Cultivation—</i>	
Hoeing 4	12 0
Mamutting, Hoeing and earthing	7 8
Applying 1st dose of manure labour charges	2 8
Applying 2nd dose of manure with earthing	10 0
Cost of manure of Groundnut cakes at 4 candies per acre. Candy of cake at Rs. 12-8	50 0
Fencing, watchmen and sundries	50 0
Crushing charges at Rs. 3-8 per pothy for an average yield of 20 pothies	70 0
Assessment and water rate	16 0
Levelling of land after cane harvest and removing the stubbles	10 0
Lease amount per acre if it is a lease land	75 0
Total	368 0

The present market rate per pothi of good variety of cube jaggery with good attractive colour is Rs. 18. Average yield is 20 pothies. Total income Rs. 360.

The present market rate for round balls pyramid shape jaggery with good colour is Rs. 8 per pothi. Average yield of 20 pothies. Total income Rs. 160.

The present market rate of Brood sugar is Rs. 15 per pothi. For 20 pothies. Total income Rs. 300.

If a sugarcane-grower manufactures good quality of cube jaggery he gets no profit. All his troubles are wasted for nothing. If the crop is raised in an outright purchased land he gets the base amount. In the manufacture of round balls, pyramid shape the grower loses Rs. 200. He is not able to recover his cultivation expenses. In the manufacture of sugar he pays lease amount from his pocket. From the above statement we can clearly understand the margin of profit that an ordinary sugarcane-grower can get from an acre of land in the three kinds of manufacture of jaggery. Cubed jaggery has got a very good market in Trichinopoly, Pudukottah State, Madura and Tinnevely Districts. Round balls and pyramid shapes have to be marketed

only in Madras and almost all other districts manufacture only round balls. Very few cultivators take the trouble of manufacturing brown sugar as it involves extra expenditure in labour and extra trouble. Sometime back say 10 years back all the three varieties of manufacture were selling within a range of 3 or 4 Rupees difference per pothi which amount will be spent in extra labour and trouble and thereby all the sugarcane-growers were getting uniform price and profit irrespective of the kind of manufacture, but since 1927 the price of jaggery was falling year by year and it was worse in 1934, 1935 and 1936 when all the three kinds of manufacture gave very poor return not even to cover the cultivation expenses. In 1937 only cubes are selling at a fair price and other varieties are in a very negligible condition. The above statement applies only to cane-growers in wet lands. If it were garden land he has got an additional expense of irrigating his field for 12 months which will come to another 200 rupees expense. Garden land sugarcane was in its zenith when the price of jaggery (cubes) was selling at the rate of Rs. 40 to 60 per pothi and the margin of profit was more than Rs. 300 per acre. In the present fall in price of jaggery garden land sugarcane is beyond imagination.

12. (a) No area set aside for experiment in cane cultivation.

(b) Nothing for that purpose.

13. Experiences in cultivation give influence that all the improved varieties have to be crushed between 11th and 12th month. That is the best time for crushing. The yield becomes less if it is crushed even before or after.

Certain improved varieties require very heavy dose of artificial manures especially Fiji B. This has got a deteriorating value year by year under very ordinary circumstances and liable to all kinds of diseases like mosaic, etc., latter improved varieties require normal dose. Cattle manuring and sheep penning are not adequate for sugarcane and it has to be substantiated with cakes or chemical manures. Chemical manures with very heavy dose of organic manure give very good yield.

The sugarcane station in the Coimbatore Agricultural Farm are conducting different experiments in canes and they are releasing every year new strains with their results. Ryots generally who come in contract with the Department try these varieties for their localities and if they are convinced that a particular variety is best suited to their local conditions, they at once begin to grow that variety and the variety spreads of its own accord even without the advice of the Department. Indian farmers are very conservative and shrewd in views and it is very difficult to convince them and when once convinced our propaganda work is very much minimised.

14. (a) After the introduction of new varieties replacing the old and white reed canes of very poor quality, the ryots get very good tonnage of cane per acre. The tonnage depends upon the new improved varieties what a cane-grower raises. There are variations in tonnage in the improved strains. Fiji B gives fair tonnage, P.O.J. gives good tonnage, Co. 281 good tonnage. B-208, J-247 and some other varieties give completely low tonnage to the above strains.

(b) Greater torrage with high percentage of sucrose contents.

15. Canes are liable to damage by insect pests, fungus diseases, etc. It may be estimated to 10 to 15 per cent. If the attack is severe it may be greater.

16. I have no factory.

19. Of course the production is greater in 1936-37. No restriction is necessary. As other crops like cereals, paddy, etc., were very unremunerative people began to grow canes thinking that they would get a fair margin of income. The sudden fall in price to the lowest level has made the growers to think that cultivation of paddy is better on account of this reason all the cane-growers more than 60 per cent. left cane growing this year. So no restriction is necessary as the production mainly depends upon the fluctuations in prices of other food products and industrial crops.

20. Please refer to 11 (e).

21. Almost all the Indian average ryot is very poor in finance having very poor holdings not even to meet both ends. In the matter of cane growing finance is the main difficulty. 2nd, water facility during the time of draught and to substantiate it by well irrigation. 3rd, marketing the produce. There is no good road communications. The cartage is very heavy owing to bad roads. There is no weekly shandys nearby. He has to take his produce 60 miles off to a district centre for selling. Rail is not within the reach of all cane-growers. The freight is abnormal in addition to other incidental charges which one has to pay to the Railway staff to book his consignment. In the absence of good metal roads quick transport by lorry is quite unthinkable. 4th, middleman's profit. The cane-grower after 365 days hard labour investing all his resources in the cane growing thinking that he would get a good profit to pay his land revenues, to clothe his family members, to celebrate the marriage, etc., is entirely in the middleman's hand. He rules the market whatever may be the quality of the stuff he gives quotation for the stuff and the buyer takes it without a word. Almost all the buyers are in his hands as he has advanced money for the trade purposes. As for example if to-day's quotation is Rs. 18 per pothi for cubes the retail buyers sell the same produce in retail at Rs. 36 per pothi double the quotation. Similar is the case with other kinds of jaggery. In addition to this the middleman who sits with his pot belly in his shop gets As. 9 per bag or Re. 1-2 per pothi as commission for his trouble. Taking for granted 20 pothies are the average yield he pays Rs. 22-8 commission, Rs. 1-14 per pothi for rail freight, cartage, etc. Practically grower gets Rs. 15 per pothi nett. He is not able to meet his cultivation expenses. Hence the middleman's profit must be minimised. The freight should be lowered. With regard to the delivery of canes to the factory the cane-grower cannot take his cane to the factory which is at least 15 to 20 miles off. He has to supervise the cutting work in the field and he has to supervise during transport. He has no help. He cannot engage a reliable man for this purpose at a high pay. In addition to this there is no good roads and rails. The abnormal freight on rails and the heavy cartage on account of bad roads are essential drawbacks to the delivery of canes in factories. If the factory undertakes the delivery in the field itself giving a good and reasonable price on tonnage covering his cost of cultivation, interest on his capital and a fair percentage of profit for his troubles and supervision certainly the cane-growers will have a greater impetus for cane growing under the present conditions cane growing has become a great bug bear even to a well-to-do ryot. Besides it takes 2 days for him to reach the factory from the day of cutting the sucrose contents become less and the factory people fixes the price for his cane on the percentage of sucrose available in his cane. Duration of time in transport is the chief drawback which lessens the value of his produce.

22. (a) Compulsory acquisition may be impossibility in Indian conditions. Leasing is possible provided the factory management is not avaricious in filling its own coffers without caring for the interest of the ryots.

Here comes the question of capitalists and labour. All the cane-growers are labourites and factory people are capitalists. If labour is adequately protected by legislation capitalists (factory) people and middleman will not get the lion share of the profits (if there were really profits) but gets lion share in the capital he invested for raising cane. Big capitalists are daily sapping the very life blood of those poor ryots and they are helpless.

(b) There are localities where cane is grown to a very large extent. In these tracts there is no factory sake for instance Kallakurichi this is a big cane area more than 1,000 acres of canes raised within a radius of 10 miles. There is no sugar factory. There is factory one at Nellikuppam which is 50 miles off from this place. No rail communication nearby. Heavy transport charges are the greatest stumbling block. A factory can be started in this particular locality and the cane of these existing growers can be brought for sugar manufacture and the area of cane growing will be in

increase in leaps and bounds after the establishment of a factory. The factory should be started on a joint stock basis wherein the government must invest 50 per cent. of the substantial capital. The other 50 per cent. of the capital should be subscribed by the public capitalists and almost all the cane-growers must necessarily be shareholders of the factory. The factory will be equipped with up-to-date machinery and guided by good engineers and sugar experts. Must advance money to the cane-growers at a very low rate of interest (at bank rates). The factory management should have agricultural experts of their own, whose main duty should be to advise the cane-growers to grow improved and profitable cane crop and to give advice in the improved method of cultivation. Cane-growers must be supplied with manures like cake and the Agricultural demonstrator should see whether they apply proper dose of manure to his crop. Under the ready finance advancement by the factory and the strict supervision of Agricultural expert, the cane-growers cannot but raise a very good crop giving a greater number of tonnage. At the time of cutting, the factory must make arrangements to take delivery of the produce and since Government being a chief partner, absence of road will be an impossibility to the factory and the price of cane should be fixed after the examination of sucrose contents, taking into consideration the price of jaggery in the market. This must be settled after due enquiry by the agricultural department every year in consultation with the factory management and the factory people must abide by the rules and regulations given by the government officials in the matters of quotations, etc. In addition to the price for his cane the cane-growers must get his usual dividend from the profits of the factory and a certain sum must be set a part from the factory profits as bonus for distribution to the cane-growers. The bonus should be given according to the tonnage he supplies to the factory. This will give greater impetus for a cane-grower to cultivate his crop carefully to get the maximum amount of tonnage. The cane-growers get reasonable amount of income for his crop and his condition in life will be very much bettered as years go by and he will be relieved of his indebtedness in course of time. Unless the Government takes keen interest in the welfare of the ryots who are the main prop, and supplier of revenue administration of the government the agriculturist population will be nowhere and there will be a real deadlock even in cultivation.

With regard to factories there is keen competition between Indian capital and European capital. Nellikuppam factory belongs to European capitalist. They will never allow other Indian industries to thrive owing to the fear of competition no company was started. Cane company was started at Kallakurichi for sugar manufacture and more than a lakh of rupees was subscribed as shares and it was voluntarily liquidated. The government do not give any help to Indian industry and no industry will thrive without its help. That is why I insist that Government should be chief partner in all industrial concerns in the province. Foreign capitalists dump their sugar into India and they compete with Indian manufactured sugars. Imported sugars should be heavily penalised by levying "Duty". They must be in such a position as not to compete with Indian manufacturers. Government will have no interest unless it has got a share in it. Indian can boast of even supplying to the whole world sugar and jaggery provided sufficient production and help are given.

52. The cane-growers and agriculturists in general are in the clutches of the money lenders and at the time of harvest they have to sell their produce to the money lender at a low rate irrespective of the market rate. Ryots are ruined and they are running in debts. Just at that time the Co-operative Department came into existence and started societies and began to furnish capital by giving loans to the Agriculturists. The condition of the ryots have become worse. They are not able to discharge the society dues as well as his other dues. The land value has fallen by 50 per cent. owing to the economic depression and fall in price of all the food products. The Co-operative Department instead of furnishing money should supply to the ryots in kind instead of money by way of supplying good seed, manures, implements, etc.; and the Agricultural Department co-operating with the

Co-operative Department should see whether they do the Agricultural operations in time and in a proper way. The Agricultural Department should supply to Co-operative seed depôt good seeds of all kinds, manures, etc., at a very cheap rate and they must give to the ryots for the same rate. Then the matter of cane growing the Agricultural Department should see whether the ryot does his operations in time, whether he applies proper dose of manure and whether he manufactures his jaggery in the best possible way if he does not do the Demonstrator should send his maistry and train the people to prepare good jaggery. Unless the quality of manufacture is improved, the produce cannot be sold in markets as a joint concern. The Co-operative Department must come forward and take all the produce from the ryots for his dues to the society and the department must find a good market with a very favourable quotation to sell the produce most advantageously. Deducting the dues to the society and other incidental charges by way of nominal commission to the society if any money is left it may be credited in his account. There is a marketing officer drawing a very fat pay who can do Yeoman's service to his country men by way of finding solutions to sell the ryots produce to the best advantage.

The ryots are not in any way benefited by these marketing offices and I do not know what that officer is doing is an enigma. He goes here and there, gives a lecture more on a theoretical side than a practicable one. These provincial marketing officers should be under the direct control of the Agricultural Director who handles the other side of activities and he will instruct him to do such and such things. He is in control of Imperial Council of Agricultural Research whose work will not be of any use to a practical farmer. The government must take initiative in the matter and always should have the interest of the ryots in its heart and do the needful then and there through the two sister Departments—Agriculture and Co-operative.

(16) *Letter, dated the 23rd June, 1937, from Mr. G. K. Chokanathan Chetty, Kilgavarapect, Panruti P. O., South Arcot.*

I have the honour to enclose herewith my replies to the questionnaire, sent by the Deputy Director of Agriculture, IV Circle, along with his letter No. C478/37, dated the 8th June, 1937.

1 & 2. *Nil.*

3. (a), (b) & (c) Yes, as far as I am aware.

4, 5, 6, 7 (a), (b), 8 & 9 (1) & (2). *Nil.*

Raw Materials.

10. Yes. Lands owned by me.

11. (a) About 250 acres.

(b) About 30 acres.

(c) Fiji B, from a long time; and P.O.J. 2878 and Co. 281 for the last three years.

(d) Sugarcane is followed by ragi, groundnut; or groundnut alone alternate years; or sugarcane is followed by a short fallow for six months followed by gingelly-cotton.

(e) Fiji B—30 tons per acre.

P.O.J. 2878—about 32 tons per acre.

Co. 281—about 35 tons.

(f) Appended.

12. (a) & (b) *Nil*.

13. No experiments are tried either varietal or manurial. But the advice of the Agricultural Department regarding the use of economic implements for preparing the land, selection and treatment of deeds, planting with proper spacing and in the control of disease, etc., is followed.

14. *Nil*.

15. Loss due to disease or insect pests 10 to 15 per cent.

16. *Vide* answer to 11 (c) and (e) regarding varieties and yield.

17. Only one factory in this area.

18 (a) & (b) & 19. *Nil*.

20. Cost of cultivation by an average cultivator is much less per acre than the figure given by me in Appendix I. Correspondingly the outturn per acre is also less. (Full details are not available.)

21. Want of ready money for meeting expenses on preparatory cultivation and purchases of seeds and manures. Delay in the issue of cutting orders and in the payment of cash for cane supplied. I am not aware of the circumstances under which delay for issuing of cutting orders occurs. I submit that investigations may be made for avoiding this delay which leads to loss of tonnage and postponement of further cultivation. In this connection co-operative agency can come forward to give timely financial help.

22 (a), (b) & 23. *Nil*.

24. (a) *Nil*.

(b) Licensing of new factories will be desirable as that may create healthy competition resulting better prices for the cultivator.

(c) Extension of the existing factory would be very desirable if that will solve the delay in the issue of cutting order.

25 & 26. *Nil*.

27. Generally sufficient. The main roads are good in parts and bad in others. Feeder roads are mostly very bad requiring culverts in several places.

28. The average time taken varies from 12 to 30 hours. The distance varies from 3 to 50 miles.

29. Double bullock country cart carries $\frac{1}{2}$ to $\frac{3}{4}$ ton of cane. The cart hire per mile is roughly 3 annas per mile for first 5 miles and reductions thereafter.

30, 31, 32, 33, 34, 35 & 36. *Nil*.

37. According to my experience there is a loss of 5 to 10 per cent. in weight.

38 (a) & (b) to 104, 105 & 107. *Nil*.

108. I am not able to say how far the protection given to the industry has been effective. But it is a known fact that the grower has not been getting enhanced prices.

109. Whatever measures may be adopted the grower's desire is that he should get better prices for his canes or gur. I may add that the local factory was paying so much as to work at Rs. 18 to Rs. 22 per ton only a few years ago.

110 & 111. *Nil*.

In conclusion, while thanking the Board for the opportunity given to me to be of assistance in this enquiry, I have the honour to request that the Board will be pleased to carefully and sympathetically consider the question of prices paid to the cultivator being a matter of vital importance if the sugar industry is to thrive.

Cost of cultivation of sugarcane per acre.

Particulars.	Fiji B.	Poj. 2878.	Co. 281.
	Rs. a.	Rs. a.	Rs. a.
Preparatory cultivation	11 8	11 8	11 8
Seeds	30 0	22 8	22 8
Expences after cultivation	39 8	37 0	37 0
Manures	100 0	85 0	75 0
Watering	80 0	60 0	60 0
Cutting and cart hire	40 0	45 0	50 0
Watchman	15 0	15 0	15 0
Removing of stubbles	7 0	7 0	10 0
Land lease	50 0	50 0	50 0
Miscellaneous charges	2 0	2 0	2 0
Total	375 0	335 0	333 0

(17) Letter, dated the 27th June, 1937, from Thota Subbarao, Veeravaram, Peddapur Taluk, Madras.

I beg to submit the answers to the "General Questionnaire" on sugar industry hereunder *seriatum*.

1. Kirlampudi Sugar Factory, to which we are supplying cane, was started in the year 1934-35 and its full capacity to be 150 tons per day.

3. (a) Yes, (b) No, (c) Yes.

11. (a) Total area under sugarcane around the factory is about 850 acres.

(b) The above area is the normal one and so it can be as average area.

(c) Co. 213 and J. 247 are the main varieties.

(d) It is rotated with paddy once in 3 or 4 years. Land is not left fallow. Hitherto castor-cake was the general manure for cane at 10 bags per acre. And it has now been replaced by inorganic manures.

(e) The average yield per acre of Co. 213 is 20 tons and that of J. 247, 30 tons.

(f) Cost of cultivation per acre—

	Rs.
Ploughing 6 times	9
Cost of seed	25
Planting	5
Hoeing 4 times	20
Trenching twice	10
Cost of manure	35
Hoeing after trenching	5
Cost of bamboos, considering the depreciation in value .	100
Propping twice and wrapping 4 times	30
Cutting cane and removing trash	} 65
Milling and preparing jaggery	
Land cess	30
Interest on the above	16
Total	350

20. Cost of cultivation per acre of sugarcane was furnished under 11 (f). The outturn per acre will be 30 tons.

21. There are no transport facilities like roads and bridges on channels and the price offered for cane is very low being Rs. 7 per ton.

28. Cane is brought from a distance of 1 to 4 miles. The cane cut in the forenoon is delivered at the factory at noon and that cut in the afternoon is delivered at 6 A.M. next day.

29. One rupee per ton for two miles. We employ mostly our own carts.

38. Factory is purchasing all the cane direct from cane-growers.

39. The factory authorities are entering into contracts with the ryots for supply of cane. No advances or any other assistance given to ryots.

42. There is a weighbridge for weighment of cane. The payment is made generally after the lapse of a month.

	Rs.	Rs.	
43. 1934-35	12	} per ton (at the factory.	
1935-36	11 to 9		
1936-37	4 to 7½		

The prices vary at different periods of the season.

44. No. It does not depend on the price of sugar. Prices brought to the lowest level possible.

45. The price offered for sugarcane varies with the price of jaggery.

46. Yes. The prices have fallen down abnormally but it is not due to any local conditions.

47. Prices are not fixed. The price offered by the Factory authorities is considerably lower than the price proposed by the Local Government. (Rs. 11 per ton in the field.)

105. The sugar excise duty has adversely affected both the manufacturer and the cane-grower.

109. The protection should be continued.

110. The excise duty must be removed in the interests of the cane-growers and Factory-owners are not able to offer high prices for cane. The price of sugar has not gone up after the levy of the excise duty and so the Factory-owners are deducting the duty payable to the Government from the price of cane they are offering.

- (18) Letter, dated the 23rd June, 1937, from Mr. A. Chandramowleswara Row, Secretary, Vuyyur Firka Agricultural Association (organised by Government), Director, Co-operative Cane-growers' Association, Vuyyur (Kistna District), Madras.

I enclose herewith answers to the questionnaire of Tariff Board for the items of which I have a personal knowledge for your kind consideration.

ANSWERS TO GENERAL QUESTIONNAIRE.

Production of Sugar.

Introductory.

1. In 1936 full capacity is 850 tons of cane per day.
2. In 1936 62,750 maunds of sugar and 1937 65,360 maunds of sugar.
3. (a) The factory is almost situated advantageously in the midst of Kistna delta of rich sugarcane growing lands.
- (b) In respect of road the factory is just on the Masulipatam-Hyderabad road and there is boat communication also by Pulleru canal.
- N.B.—It is likely that Divi taluk may be connected with Bezwada by a railway line *via* Vuyyur in near future for which the inhabitants of these villages are agitating.
- (c) Labour is a little bit dear as we have to pay Rs. 10 per head per man on average.
4. Double sulphitation.
9. (1) Yes, we require more help as the Sugar Industry is now in its early stage.
- (2) Yes. The ryots are to be encouraged in every possible way to extend the cane area.

Raw Materials.

10. Yes. I am cultivating cane in my own lands only.
11. (c) The main varieties are Co. 243, 213, 281 and purple Mauritius. Co. 419, 421, 313, P.O.J. 2878 have been newly introduced.
- (d) Sugarcane is generally cultivated in wet lands where paddy is grown. After paddy is harvested in January the cane is planted in the same field. Cane is cultivated in the same land once in 4 years. As for the manures of cane we generally apply 100 lbs. of nitrogen, and 40 lbs. of phosphate per acre in the form of Ammonium Sulphate, Niciphos and Oil Cakes. Cane is retained for about two years in the same field but a ratoon crop requires more manure and gives less yield than the first year crop.
- (e) We generally get on average 20 to 30 tons of cane per acre of first year crop, and about 10 to 20 tons from ratoon crop of Co. 243, 213, 281.

Per acre.

	Rs.
(f) Preparatory cultivation 6 ploughings	12
Preparing the Roads	3
Seed material, 2½ tons	5
Labour for planting	5
After cultivation	7
Manure and application	50
Harvesting charges, 20 tons	20
Transport charges	25
Water rate land tax and other cesses	18
Total expenditure	165

35 A

12. (b) 1 anna.

16. It is not assured of a sufficient supply of cane as yet. The principal varieties are Co. 243 and 213 which are giving 25 and 20 tons of cane per acre on average.

17. There is no competition as there are no factories in neighbourhood.

20. Please see 11 (f). The average outturn is 20 to 25 tons per acre.

21. (1) Irrigation.

(2) Transportation of cane from field to the factory.

There should be full supply of water till the middle of April and there should be feeder roads from the neighbouring villages to the factory. These two factors are to be solved by the Government. The cultivators are much benefited by the factory undertaking to carry cane from field to the factory on its own lorries.

22. (a) I think compulsory leasing of land for cultivation of cane is possible if the Government has mind to help the industry just as in Java.

(b) Special areas to grow cane under a particular canal to facilitate irrigation may be allotted every year for successful running of the factory.

23. We have already started a concern by name Co-operative Cane-growers' Association which lends manures, seed and cash to its members on co-operative basis.

26. Yes, Cane is being transported to the factory by bullock carts, motor lorries and by rubber-tyred carts. Tyred carts and motor lorries are owned by the factory.

A bullock cart can carry about one ton of cane.

A rubber-tyred cart can carry 2 to 3 tons of cane.

A motor lorry can carry about 3 tons of cane.

29. Some carry cane on their own carts and some engage on hired carts. Cost of hiring depends on the distance.

30. No.

39. See 21.

42. On weighbridges.

Marketing.

105. A tax on the consuming public and the cane-growers as well as a serious blow to the factory-owners and the upshotting Sugar Industry.

Claim for Protection.

109. Due to the high import duty levied on foreign sugar the import of sugar into India has fallen to a greater extent and the Sugar Industry in India has chance to rise up its head and thus is able to solve the unemployment question to a greater extent. It seems even England is still enjoying such a privilege as the protection of sugar industry.

India is a poor country of agriculturists whose mode of cultivation has not yet developed on scientific lines just as in Java and other foreign countries. As such we request the Government to continue the protection of the sugar industry by not reducing the import duty at all on foreign sugar and by cancelling the new excise duty at an early opportunity and thus encouraging the new industry.

(19) Letter, dated the 24th June, 1937, from M. R. Ry. A. V. Bashyam Reddi Garu, Landholder and President, Sethyatope Vellar Anicut Mirasders' Association, Reddi Hotel, Cuddalore, Madras.

With reference to your Questionnaire along with the letter C. 478-37, dated the 8th July, 1937, forwarded to me by the Deputy Director of Agricul-

ture, IV Circle, St. Thomas Mount, I have the honour to enclose herewith my answers with six spare copies.

I request you to kindly convey my thanks to the Board for having invited me to present this written evidence for the favourable consideration. I trust that as a result of deliberations the poor sugarcane cultivators whom I have the honour to represent will be ensured of a better price for his produce.

If there is any further information you require I shall be pleased to furnish you with them so far as I can.

I request you to acknowledge receipt of this by the return of post for which a postage envelope is herewith enclosed.

Enclosure.

ANSWERS TO QUESTIONNAIRE.

3. (a), (b) & (c) Yes, generally.
10. I have got my own lands and raise sugarcane therein.
11. (a) 100 acres.
- (b) 6 acres (Half the area in garden lands and the other half in wet lands).
- (c) Fiji B.
- P.O.J. 2878 and Co. 281.
- (d) Sugarcane followed by paddy in alternato years in wet lands and sugarcane followed by groundnut alternately in garden lands.
- (e) Fiji B about 32 tons per acre in wet lands.
- Fiji B about 30 tons per acre in garden lands.
- P.O.J. 2878 about 36 tons in garden lands.
- Co. 281 about 36 tons in garden lands.
- (f) Separately attached (Appendix No. I and II).
12. (a) & (b) Nothing at present.
13. No experiment is tried. However, Agriculture Departmental advice is always availed of.
14. (a) & (b) Nil.
15. About 12 per cent. by disease. Being a coastal tract sugarcane is liable to be damaged by periodic cyclones, the extent of damage varies from 50 to 75 per cent. depending upon severity.
16. Answer is given in 11 (c) and (e).
- 17, 18 & 19. Nil.
20. No systematic observation has been made by me. Still, I am sure his expenses are much less and his yields are still less than my figures.
21. Financial help is not easily available and in time for initial expenditure for cultivation, seeds and manuring. Advance given by the Local Factory are inadequate since there are many inconvenient restrictions. There has been considerable delay in giving cutting orders. There has also been much delay in the weighment of cane and this leads to loss in weight suffering to cattle and cartmen left in the open. Facilities should be given to be free from all these difficulties and restrictions. There has been considerable delay in giving cutting orders. There has also been much delay in the weighment of cane and this leads to loss in weight suffering to cattle and cartmen left in the open. Facilities should be given to free from all these difficulties.
- 22 & 23. Nil.
24. (a) Nil.
- (b) (1) Licensing of new factories will be desirable as reasonable prices can be secured on account of healthy competition.
- (2) Extension of existing factory will also be good since it is expected cutting order will not be delayed.

25 & 26. *Nil.*

27. Yes, main roads are usually fair and feeder roads are bad.

28. The average time taken varies from 6 to 30 hours as canes are brought from a distance of 1 to 20 miles.

29. Canes are brought mostly by open carts—mostly hired carts. The minimum cart hire for a cart load of cane is eight annas for distance of 1 to 2 miles; for longer distance beyond 2 miles the average cart hire per mile is $2\frac{1}{2}$ to 3 annas.

30-36. *Nil.*

37. About 10 per cent. loss.

38-104. *Nil.*

105. I & II. The effect has been a reduction in the price of millable cane to the poor cultivator.

108. Protection might be good for Mill-owners but the grower has not obtained higher prices. On the other hand considering the high cost of cultivation and the period of growth (12 to 15 months depending upon the issue of cutting order) of the crop, the prices obtained in recent times have been too low to encourage the continuance of sugarcane cultivation (*vide* Appendix I and II).

109. See 108. All that I wish to emphasise is that there should be some regulations under which the Mill-owner should pay a reasonable price to the cultivator.

APPENDIX I.

Cost of cultivation of sugarcane per acre in dry land.

Particulars.	Fiji B.	Poj. 2878.	Co. 281.
	Rs.	Rs. a.	Rs.
(1) Expenses to preparatory cultivation	11	11 0	11
(2) Seeds and sowing	36	27 0	27
(3) Expenses after cultivation	36	33 0	33
(4) Manures	100	87 8	75
(5) Irrigation	80	60 0	60
(6) Harvest including cartage to the Factory.	45	50 0	55
(7) Watchman	15	15 0	15
(8) Assessment	3	3 0	3
(9) Land lease	60	60 0	60
(10) Miscellaneous	10	10 0	14
Total	396	356 8	353

APPENDIX II.

Cost of cultivation of sugarcane per acre in wet land.

Particulars.	Fiji B.
	Rs. a.
(1) Expenses to preparatory cultivation	12 8
(2) Seeds and sowing	40 0
(3) Expenses after cultivation	40 0
(4) Manures	125 0
(5) Irrigation	25 0
(6) Harvesting including cartage to the Factory	45 0
(7) Watchman	15 0
(8) Assessment	10 0
(9) Land lease	75 0
(10) Miscellaneous	12 8
Total	400 0

(20) *Letter, dated the 24th June, 1937, from Mr. V. C. Vellingir Gounder, President, District Board, Vellakkinar, Coimbatore, Madras.*

I have to acknowledge the copy of the questionnaire with the forms you kindly sent to me on the 12th instant. As I have been busy from the past few days I could not be able to acknowledge the same and prepare and send my replies earlier than now.

You know we are running a Sugarcane Society since 1935 upon the encouragement promised by the Central Government with a subsidy which is yet to come. I had to consult the members of the same in preparing the replies which I send herewith.

GENERAL QUESTIONNAIRE.

*Introduction.**Raw Materials.*

10. We do not undertake cultivation of sugarcane.

11. *Nil.*

12. We have provided for conducting experiments on the manurial requirements of cane and production of seed material of improved varieties in 9 centres of our area, viz., Singanallu, Sulur, Pallapalayam, Kuniyamuthur, Koilpalyam, Vellakinar, Thondamuthur, Kinathukadavu and Annur. So far we have not actively taken on hand any work.

13. We have not by ourselves conducted any experiments of the kind suggested. But some of the varietal experiments of the Agriculture Department are conducted in the lands of our Members.

14. The quantity and quality of Poovan which is still the predominating local variety of canes have become poorer and poorer in the last seven years. Within the last 2 or 3 years, however, improved varieties have been replacing the Poovan in the Avanashi Taluk. This process of replacement is gradually going on in other taluks as well with even better varieties, viz., 213, 290, 413, 419, 421.

15. Sugarcane in our area does not suffer any damage by frost. But Mosaic and Red rot are rampant. Insect pests, chiefly stem borers are also very common. Damage by one or more of these may be estimated as 50 per cent. judged from the yields which are now reduced by more than half the usual yields.

17. Cane prices are not determined by competition of other factories as there is only one factory in our area which deals with the produce of 300 acres out of 6,000 in the district. But jaggery prices influence, in a way, the prices payable by the Sugar Factory.

18. The area under sugarcane has been going down this last three years due to (i) unfavourable seasons, low rainfall and insufficient supply of water in channels and wells, and (ii) low prices for both sugarcane and jaggery. Crops like Cambodia Cotton, Plantains (in places), Chrysanthemums (in places), etc., are less troublesome to cultivate and are more paying.

19. The production of cane in this district is less than the average during the last three years but still in excess of local demand.

20. Cost of cultivation per acre—

	Rs.
Preparing land	15
Manuring	30
Seeds (own seeds are used)	20
Weeding, earthing, etc.	20
Irrigation—	
Wet land	40
or	
Well-garden	50
Harvesting and milling cane	75
Lease on land (1½ years)	80
Total	320

The outturn of jaggery ranges from 70 to 100 (82½ lbs.) maunds which in money value, according to present average prices, will be Rs. 300 to Rs. 450 (Rs. 15 per Pothi), expressed in terms of canes, the outturn will be 600 to 900 maunds. The return will be better if the jaggery is of good quality which becomes very poor in years of adverse seasonal conditions.

In the above statement we have taken into consideration the converting of the produce into jaggery. One ton of canes will yield approximately 3½ maunds of jaggery. Cost of jaggery making will be roughly equal to the cost of transport from the village to the sugar factory if the produce is sold away as whole canes.

21. The main difficulties of cultivators are:—

- (1) They have themselves to carry the canes to the factory in their carts whereby they are to be absent from their holdings for nearly a whole day. Such absence, continuously every day during the harvest season, when planting also is to occur along with various other farm operations, causes much inconvenience.

The inconvenience becomes greater when a larger area is dealt with by such cultivator.

- (2) Roads are not very good.
- (3) There is worry by the Society for Prevention of Cruelty to Animals and other persons when carts are to pass through the town.
- (4) The Sugar Factory sometimes stops work all on a sudden and ask the cultivators to defer their supplies. This has caused some inconvenience.
- (5) Prices of cane are not assured. It is good in some years and bad in others. In the same season the factory tries to vary the prices every now and then.

In our opinion if arrangements could be made for:—

- (1) Delivery of canes at a common place in each village, and
- (2) Announcement of fixed prices in advance at the time of planting the difficulties of growers will in some measure be abated.

22. (a) Acquisition of land for the sugar factory will be impracticable.

(b) If good prices are assured it may be possible for us to organise planting crops in convenient blocks for regulated supply of cane. Financial aid from Government is necessary in the preliminary stages for such organisation.

A system of zones, in the sense that the cane area of each village or centre should, as far as possible, be in one block will be greatly beneficial. But this question, is linked up with various other factors. We do not envisage an easy solution of this point.

23. We could extend assistance by providing advances in cash or kind for cultivation of sugarcane. Development of feeder roads will, however, have to be undertaken by Government or the District Board.

24. (a) The local markets are flooded with sugar from other sugar factories as in Northern India. To prevent this dumping and favour the increased consumption of local sugar, we would welcome a quota system for sugar manufacture by the factories. But in fixing such quota, allowance must be made for either the existing factory in our area or new ones to be hereafter started consuming more of our canes, i.e., the quota for the factory or factories in our area must be fixed on the basis of sugarcane cultivated at the.....in that area and not on that of the present sugar production.

(b) Based on the arguments in 24 (a) above we would suggest that provision may be made for the licencing of either new factories or extensions to the existing factory in our area. Licensing of new factories if proposals for starting them are forthcoming and extensions of existing factories in other areas should at the same time be restricted, in such a way that those additions or extensions will not compete with the factory (or factories) in our area.

25. All our canes are delivered to the existing factory by the growers themselves at the factory.

26. Our canes are carried almost entirely by bullock carts by the growers. A cart carries, on an average, 28 maunds (ton).

We have suggested in our answer to question 21 that canes should be delivered at common points in villages, transport from those points to the factory should be arranged by the factory. For this purpose lorry transport will, at present, be most efficient.

As regards the substitution of rubber-tyred carts for the existing country carts, we have to say that we do not possess exact data of the additional maundage of cane carried. But we do believe that such carts will be better in all respects than local carts.

27. The mileage of roads in our tract is generally good. But in the case of wet lands this is totally inadequate. More than 50 per cent. of our canes is grown in wet lands. Canes in the middle of a wet tract cannot easily reach the point on the road where they are to be loaded in carts. In such

cases development of tramways or ropeways would be largely beneficial. This question is, however, unimportant at present as the factory in our area is small and cannot consume all our canes. But urgent action is called for regarding improvement of main and feeder roads. Very little attempt has been made by Government, at improving feeder roads; and main roads are not receiving as much attention as they should.

28. Under ordinary conditions canes grown within a distance of 15 miles from the factory are taken to the factory. The time taken from cutting to delivery at the factory ranges from 24 to 36 hours, according to distance, condition of roads, etc. During the road transport the canes are not protected from deterioration. But if the factory undertakes to remove canes by lorry, deterioration can be avoided.

29. The average cost of transport by cart is 1 pie per mile per maund. The growers employ both own and borrowed carts as well as the hired carts for transport. The hire rates are indicated above.

30. No tolls were ordinarily levied. The sugar factory demanded sometimes, two pice per cart as charity, but not now.

31. The factory in our area has at present no arrangements for continuous and uniform supply of gate cane. They expect the society to arrange this but we have our own limitations in the matter. Absence of a fixed and regulated demand for canes by the factory on a definite pre-arranged price basis and of competent executive staff to manage the work are the chief obstacles in our way. Our resources are very slender, as we are in our infant stage and as the Government subvention promised to us has not yet materialised.

32-35. Canes are not transported by rail or tramway to the factory.

36. Tramway or ropeway system will be advantageous for the wet land area immediately surrounding the factory. The main difficulty, as we see it, is the absence of a steady and continuous demand for canes. When this becomes assured, we can investigate the possibility of arranging such means of transport on the financial aspect. When the time for that comes, it would probably be necessary for the Government departments extending to us all the necessary help and concessions in the way of acquiring land for the lines, supply of electricity at cheap rates, etc.

37. We have no precise data on hand to report on the extent of deterioration brought about by delay in delivery of canes.

39. We do not at present have any standing arrangements with the sugar factory regarding supply of canes. We grant to our members, crop loans on the understanding that they should, subject to fair prices being ensured, supply their canes to the factory through us. In such cases we demand from the factory a commission to cover handling charges. The amount was 4 annas per ton in one of the last season. We allow a part of this commission to the members supplying the canes.

42. Canes are weighed at the sugar factory in cart loads in their weigh-bridge. Prices are paid to us by the factory as advances on cane supplied at weekly or other convenient intervals. The amounts due to members are also disbursed in the same way as and when demanded. At the end of the season the accounts are checked and finally adjusted.

In future we propose to insist on cash payments by the factory daily for cane supplied each day as our bye-laws do not provide for credit sales.

43. The prices paid by the Sugar Factory are as follows:—

1935.—Rs. 12 per ton=As. 6-10 per maund.

1936.—First season Rs. 11 per ton=As. 6-3 per maund.

Second season Rs. 7-12 per ton=As. 4-5 per maund.

Average of prices paid to members of our society.

1937.—No canes were bought as the factory could not pay adequately for canes, sugar prices being low and jaggery prices being high. Prices do vary at different periods of the season dependent on

- (1) the sugar prices, and
- (2) the analysis of canes.

The best analysis is obtained in February-March. Thereafter there has been deterioration in the factory canes. This statement is, however, subject to the qualification that I Class canes did not reach the factory in the late and second season.

44. The prices paid by the factory are based on sugar prices, the factory costs and the available sugar in the canes. The formula adopted in 1936, second season (July), was as follows:—

Price per ton of cane in Rupees = Brix multiplied by extraction percentage multiplied by 0.8905.

The factor will be varied according to sugar prices. Different extraction percentages are adopted for different canes based on a few preliminary trials.

45. One ton of sugarcane produces roughly one Pothi of jaggery (Pothi = $3\frac{1}{4}$ maunds). The cost of transport of cane is taken as equal to the cost of crushing and making the jaggery. On this basis the price per ton of cane delivered at the Sugar Factory must be equal to price per Pothi of jaggery. When the price of jaggery goes above Rs. 15 per Pothi the factory will not get any cane. When the price falls below Rs. 12 per Pothi the factory could obtain canes on the basis of their payment. Between Rs. 12 and Rs. 16 per Pothi first class canes get crushed for jaggery manufacture and poorer quality gets supplied to the factory.

There is no production of Khandsari sugar locally.

46. There have been considerable variations in the price of jaggery. The main cause for such variations is that of demand for export to the West Coast districts, Hyderabad and Bombay.

47 & 48. No minimum prices have been fixed.

49. In any scheme of fixing minimum prices a system of bonus payments is necessary for

- (1) Quality, and
- (2) For early or late canes to compensate for lower yields and or poor quality brought about by the planting out of season.

50. The duration is as follows (for the Factory only):—

		Days.
1934	I crop season	119
	II " "	
1935	I " "	34
	II " "	
1936	I " "	73
	II " "	
1937	I " "	19
	II " "	
	I " "	Nil.

Except in 1936 first season the supply of canes was inefficient and irregular due to the price complex. The period should be longer for economical working.

51. In our tract there are two recognized seasons for planting canes, viz., February-March and July-August. As a result of this there is a continuous supply available from the middle of January till end of September with a break in May. One season merges into the other and planting is pretty nearly continuous. By proper organisation the existing practice could be easily perfected so as to allow of steady and continuous supplies of cane to the factory from January till September.

52. We derive some help from the Agriculture and the Co-operative Departments. At present we do not receive any direct assistance from the Imperial Council of Agricultural Research. We would desire intensification of the assistance we now receive from the Departments. If the proposed subsidy from the Government out of the Sugar Excise duty is granted

to us, with retrospective effect and without much further delay, we could go ahead with our programme and promote the prosperity of the sugarcane growers.

(21) *Reply furnished by Mr. A. S. Venkataraman Aiyar, Trivandrum.*

GENERAL QUESTIONNAIRE ON SUGARCANE CULTIVATION AND PRODUCTION OF SUGAR, ETC.

10. I cultivate sugarcane in my own lands. There are ryots raising sugarcane over lands taken on lease as well, in which case the growers pay lease for the lands due to the owners in the shape of paddy according to prevailing lease rates.

11. (a) I own about 50 acres wet lands of which 15 acres in 3 blocks are supported by wells and suited for cane cultivation.

(b) Sugarcane is had over 5 acres each year.

(c) Variety grown is Fiji B, though for the past two years over very limited areas P.O.J. 2878, Co. 281, Co. 413 and Co. 419 are also raised.

(d) Planting is done in trenches 2½' apart opened 2 to 3 weeks in advance to date of planting. The lands are never left fallow. A three-year rotation is followed, crop raised being—

1st year.—Irrigated groundnut followed by samba paddy.

2nd year.—Indigo for green manuring for and samba paddy.

3rd year.—Sugarcane.

Generally sugarcane crop receives farm-yard manure (well decomposed) at 10 cart loads per acre as initial dose in trenches and either groundnut or castor cake manures at rates 4 or 6 candies (1 candy=500 lbs.) in 2 doses during the growing period of the crop. Limited areas receive Parry's mixture manures or ammonia sulphate in conjunction with oil cakes in varying quantities.

(e) The average yield per acre for Fiji B variety is 20 tons cane while that for the varieties under trial is about 25 tons.

(f) Cost of cultivation per acre—

	Rs. A.
Ploughing twice with medium-sized iron plough and trenching	7 8
Cost of cane setts 12,500 at Rs. 1-8 per 1,000 getting ready the same for and planting	20 0
Weeding twice for the crop	5 0
Irrigations from well for 7 months 40 times allowing margin for any rainfall received during the period at Rs. 1-8 per irrigation	60 0
Farm-yard manure—Cost of 10 cart loads at As. 8 per cart-load	5 0
Oil cake manures at 4 to 5 candies or other manures for application	60 0
Cost of application of manures and earthing up twice	7 8
Wrapping for to facilitate application of manure, trashing and removal of trash	5 0
Cutting canes bundling and arranging at As. 8 per ton	10 0
Levelling the land after harvest and making it fit for the crop to fallow	5 0
Total	185 0

12. No experiments in cane cultivation are conducted. The surplus setts obtained from the regular crops after finishing with my plantings are being sold to other cane-growers who may require.

13. No regular experiments are conducted. At the instigation of the Agriculture Department early cane varieties such as Co. 281, Co. 413 and Co. 419 are under trial over very limited areas.

14. (a) & (b) The area under sugarcane is on the increase to some extent in parts with no change in the quality of cane.

15. There is no perceptible loss at any period due to the causes detailed. During years of less than average rainfall the crops may become stunted and yield below average tonnage.

18. There have been no appreciable variations in the areas under the crop at any time.

19. There was no appreciable increase in the production of sugarcane in these parts during 1936-37. As such no restrictions for control of cane cultivation are necessary.

20. The details called for are furnished under 11 (f) above, i.e., total cost of cultivation per acre is Rs. 185. In the case of average cultivators' cost might get reduced by Rs. 10 thus cost of cultivation per acre might be Rs. 175.

21. There are no appreciable difficulties felt by the cane-growers; to several petty cane-growers the cutting orders are being delayed considerably by the factory. This delay which may extend up to even two months in some cases, results in reduced tonnage.

22. (a) Suitable lands for cane cultivation to any extent may be taken on lease at rates current in the respective villages for long term periods (from 5 to 10 years); but the factory at Nellikuppam perhaps does not want to continue to raise sugarcane for itself taking lands on lease. Some years back the factory took on 10 years lease vast areas, but in recent years the area taken on lease has become quite limited.

(b) There being only one factory at Nellikuppam this question does not arise.

26. Cane from these parts are taken in country carts to the nearest Railway station put in wagons and booked to the factory at Nellikuppam. The average weight of cane per cart is $\frac{1}{2}$ ton. Rubber-tired carts may be found useful to villages adjoining trunk roads, even here their superiority may not be much appreciated under the existing conditions with ryots. Improved type of carts have not been in use so far in these parts.

27. The mileage of roads is adequate. The condition of main roads is satisfactory. While the feeder roads are extremely bad.

28. Cane is brought from maximum distance of 12 miles to the nearest Railway station. While in other cases, from villages situated within this maximum. It takes 36 to 48 hours from time of cutting cane and delivery at the factory. During road transit cane is not at all protected from any deterioration.

29. The average cost of transport of cane by cart per ton per mile is ranging from 4 to 5 annas. Depending on the size of the farm, cane-growers own 1 or 2 carts. These are used for the purpose of carting cane along with hired carts. Cost of hiring will depend on the number of trips made to the Railway station taking $\frac{1}{2}$ tons cane per trip, at rates noted above.

32. Cane is taken to the factory from a distance of about 60 miles by rail and the time taken between cutting of cane and delivery at factory may be ranging from 48 to 60 hours. Except that fully iron sheeted closed or open wagons are supplied by Railway, other arrangements for transport of cane are satisfactory. In place of the iron sheeted wagons it would be better if wooden wagons with required ventilators are provided for the purpose.

33. The Railway freight are calculated at for lots exceeding 120 maunds or 7 tons at—

6 pies per Railway maund for distance not exceeding 5 miles.

7	„	„	„	„	„	10	„
10	„	„	„	„	„	35	„
12	„	„	„	„	„	50	„
14	„	„	„	„	„	60	„

For small lots (less than 120 Railway maunds or 7 tons) the freight charges are calculated for the minimum of 120 maunds at the rates quoted above or at As. 2-8 per maund for distance not exceeding 50 miles. There have been the abovementioned rates in force these three seasons. Prior to this the rates were about $1\frac{1}{2}$ times the prevailing freight rates. The existing rates might continue.

34. The freight rates for the articles have already been reduced. Further reduction if possible, however, small it might be, would be much appreciated.

35. There is no tramway system anywhere. All transport charges on cane are borne by the growers.

37. The average for deterioration of cane owing to delay in transport might be estimated at 10 per cent. the quantity of cane handled.

38. All the cane produced for sale as such, is purchased by the Nellikuppam factory direct from the growers.

39. The factory at Nellikuppam advance to ryots in the shape of cash or manures to the extent of Rs. 150 per acre of cane grown, when the crop is full three months old. The cane areas for supplying to the factory get registered even at the time of planting.

42. Generally payment is made in one month from date of purchase of cane by the factory. In cases where the parties stand as security for other cane-growers, payment is made when cane from all the members concerned is purchased and advances received by them are accounted for—the period taken might extend to 3 months. Cane sent to factory is weighed there in the weigh-bridge for the purpose.

43. The factory was making payments on the quantity of juice obtained for the first four years, i.e., 1931-34. Beginning from 1935 season, payment is made on tons of cane supplied, at rates of Rs. 14, Rs. 13-12 and Rs. 13-8 per ton, respectively. Price of cane does not vary at any time during the season of any one year.

44. The price of sugarcane does not seem to bear any definite relation to the price of sugar. The basis on which the price of sugarcane is fixed is not known.

45. If prior to and during cane harvest period the price of jaggery is on the increase, some of the cane-growers might arrange for manufacture of jaggery to very limited extent. But the factory on this account does not pay increased price for sugarcane.

46. There have been some variations in the price of jaggery depending on supply of and demand for the article locally. These variations are not general, but it is evident with falling price for sugar the demand for jaggery is becoming less.

47. Under the Sugarcane Act referred to, minimum price for sugarcane has not been fixed. The factory issues rates at which purchase of cane would be made, sufficiently in advance every year. Prices paid for cane year after year is going down and more so these three years, i.e., from 1935-37.

48. As already stated minimum prices for sugarcane have not been fixed; hence this question does not arise.

50. All these seven years the duration of the crushing season was 5 months. As no attempt was made by the factory to extend the period, the 5 months crushing period would have been enough for economical working.

51. There are possibilities of extending the crushing season by another two months with propaganda for introduction of early and late varieties of cane and for extension of area under the crop in general. Attempt in this direction may have to be made by the factory in co-operation with the Department of Agriculture.

52. The Government organisations referred to give the necessary assistance and I have no special suggestions to offer on this.

Labour.

53-56. These are for the factory to answer.

Power.

57. It is for the factory to answer.

By-products.

58-63. These are for the factory to answer.

Storage and Transportation of Sugar.

64-72. These are for the factory to answer.

Capital Account and Overhead Charges.

73-79. These are for the factory to answer.

Efficiency of Production.

80-82. These are for the factory to answer.

Marketing.

83-92. These are for the factory to answer.

93. A marketing survey of the Sugar Industry would really be advantageous.

94. Such an organisation may be of immense benefit to regulate selling prices of sugar and to avoid any unnecessary fluctuations in the market rates.

95-97. Nil.

100. Use of sugar in place of jaggery is rapidly on the increase. In the sweetmeat trade, such of the preparations which might demand use of jaggery have since been given up. Exact details of the extent to which sugar is replacing jaggery cannot correctly be stated.

101-104. Nil.

105. The duty levied on Indian sugar, however, small it may be, may completely be abolished. Such a removal may act as incentive to further strengthen local manufacture of sugar.

Claim for Protection.

108. The measure of protection offered was of immense benefit for local manufacture of sugar and to establish facilities for further strengthening such concerns.

109. Greater protection may be given to Indian sugar by raising the duty on imported sugar by 10 per cent. for period from 1st April, 1938, to 31st March, 1946. This would facilitate more organised working of local Sugar Industry side by side with steady decent profit to the cane-growers.

110-111. Nil.

Replies pertaining to Marketing Section of the General Questionnaire.

(1) *Extract from letter, dated the 23rd June, 1937, from the Abdul Rahim Oosman & Co. (India), Ltd., Calcutta.*

1. The principal sugar marketing centres are:—
(1) Calcutta, (2) Karachi, (3) Rangoon, (4) Madras, (5) Bombay, (6) Cocanada, (7) Malabar ports.
2. (A) & (B) Generally very little business is now left between manufacturers and dealers. The manufacturers are appointing their agents and sub-agents in different parts and towns who are selling direct to the retailers, therefore there is no such thing as a regular sugar market left practically in any city at all.
3. Contract form is not suitable because there is no standard quality. There are many suggestions but until numerous factories cannot standardise qualities and the agency system is not discarded by manufacturers and dealers the contract form will not be successful.
4. There is very little or no difference between wholesale and retail prices, say whether 5,000 bags or 5 bags. Two years figures we are supplying herewith but other figures can be supplied by the Director, Imperial Institute of Sugar Technology.
5. There is actually no sugar market and therefore fluctuations are insignificant and since last three years the market is slowly going down.
6. In every city the storage arrangement is made by the dealers in private godowns and generally in July to September the inferior quality of sugar becomes stained by its own contents.
7. The inferior Indian sugar deteriorates more than Java sugar. Of course there is improvement and the several mills have started to manufacture Java quality.
8. The best imported sugar is preferred by some section of the population in the country, but at present on account of high prices of imported sugar all consumption is fulfilled by the Indian sugar.
9. The quality has considerably improved so far about 15 per cent. of the Indian sugar is equal to Java standard.
10. Mostly sugar stock is carried by the manufacturers. The dealers cannot carry it because no facility is given by manufacturers.
11. No.
12. Cannot be successful until the production is controlled and without licence no new factory is allowed and zoning system is established and all this is done by legislation.
13. We are in favour of standardisation of sugar but that will take a long time. Meanwhile efforts may be continued to make the contract on standard quality.
14. No contract has been made on standard quality.
15. This can be done only by the legislation.
16. Unless manufactures stop present system of appointing agents and sub-agents and their selling direct to retailers in different parts of India, there is no chance for any successful terminal market.
17. In 1935-36 the consumption was 1,200,000 tons. This year (1936-37) expected 1,350,000 tons. The consumption can be increased to 2 millions tons easily within 5 years if excise duty is reduced to Re. 1 per cwt. and side by side cane quality can be improved.
18. On account of cheapness of sugar this year people are replacing gur by sugar and on this subject proper attention is given, then within a decade the gur consumption might greatly disappear.
19. This can be done by separate persons and we know one factory has already started in Sind who are manufacturing biscuits and drops and some indigenous industries are going on to manufacture jam, etc.

20. This information can be accurately supplied by the Director, Imperial Institute of Sugar Technology.

21. Yes, on account of large production in the world and heavy stocks, etc. But more accurate reply you will obtain from the Sugar Technologist.

22. Indian sugar is not exported but foreign sugar is re-exported by land and sea.

23. (i) The sugar prices have fallen down and whole burden has been sustained by the manufacturers.

(ii) The burden has fallen on cultivators.

24. No arrangements.

25. Only Indian Molasses Company export. We have seen figures of export in Government publications.

Enclosure.

*Price of Sugar per cwt.**

	Rs. A. P.	Rs. A. P.	Rs. A. P.
1935-36—			
Java Whites . . .	12 15 0	to 14 7 6	
British Refined . . .	13 0 9	„ 14 8 0	
Motipur, AA . . .	13 3 6	„ 14 1 0	to 12 14 0
„ AA1 . . .			
Lohat, Sakri . . .	12 14 0	„ 14 1 0	
Marhowrah . . .	13 2 0	„ 14 5 0	
Champaran . . .			
1936-37—			
Java Whites . . .	13 4 0	„ 12 15 6	
British Refined . . .	13 5 6	„ 13 4 9	
Do. March, 1937 . . .	13 7 9	„ 13 12 0	
Motipur, AA1 . . .	12 12 0	„ 10 8 0	
Babhnai . . .	13 2 0	„ 11 14 0	
Balrampur . . .	13 1 0	„ 11 14 0	
Champaran . . .	12 15 0	„ 11 15 0	
Lohat . . .	12 6 6	„ 11 1 0	
Hatwa . . .	12 14 0	„ 10 10 0	
Hargaon . . .	12 0 0	„ 11 1 0	

(2) Letter, dated the 22nd June, 1937, from Messrs. Jeetmall Kalloomall, Calcutta.

We have the pleasure in replying you your questions respectively as per copy of General questionnaire—

Marketing Section.

1. Calcutta, Cawnpore, Bombay, Madras and Allahabad.

2. (a) Manufacturers sell their products to the dealers most often through selling agents, brokers, and sometimes direct.

(b) Dealers sell to the retailers through brokers sometimes against cash payment and sometimes on credit system.

3. The present contract form is absolutely one-sided and in favour of manufacturers only. The tender, quality, and arbitration clauses must be overhauled and contracts should be prepared in the interest of both sellers and buyers like Indian Jute Mills Association contract form.

* (The above quotations are for Karachi market only.)

4. Prices much varied during these seven years, we shall state separately.
5. No.
6. Dealers store their goods in their private rented godowns and in General Sheds of Port Commissioners. In dry season 2 per cent. the deterioration happens if sugar stored for a month, but in rainy season it becomes some 10 per cent.
7. Yes.
8. Yes. It is preferred by some high class confectioners and for high class table use.
9. It is inferior in colour and ripeness.
10. (a) About 40 per cent.
- (b) About 10 per cent.
- The stocks are financed by dealers from their own affairs and in some cases Banks also advance 75 per cent. to 80 per cent. of the value.
11. Yes.
12. No.
13. Yes. The basis of standardization should be colour, grain and glaze.
14. (a) Very little.
- (b) No.
15. The cost of standard sample should be minimized to such extent that the public may have their frequent use.
16. Terminal market will be found most essential for sugar trade.
17. About 12 lakhs of tons including Khandsari, etc.
18. Revolutionary change is happening in respect of sweetmeat trade.
20. Will be stated separately with clause No 4.
21. Owing to heavy stocks in Java it occurred during 1933, 1934 and 1935.
22. (a) Nowhere save Burma.
- (b) Nowhere. Under present crushing capacity of the sugar factories, about 2 lakhs of tons of sugar can be exported, should the Government of India as well as other countries may so desire. At least some preference should be given to Indian sugar by the Ceylon Government and this sugar should be regarded as Colonial-sugar by the Government of Britain.
23. No important effect.
24. No proper arrangement.
25. Not known.

सत्यमेव जयते

(3) *Replies to questionnaire from Mr. Chunnihal Purshotamdass, Sugar Merchant, Cawnpore.*

1. The chief marketing centres dealt with by us are, Cawnpore, Lucknow, Raebareilly, Allahabad, Benares, Bombay, Calicut, Nagpur, Delhi, Madras, Karachi, Calcutta, Bezwada, Cochin and other southern ports.

2. The chief arrangement between the manufacturer and the dealer is that the manufacturers invite offers for their products through their local agents and the offers being accepted the goods are despatched by them as per our instructions and the relative railway receipts are handed over to dealers either against cash payment or are sent through bank to be delivered against payment. The arrangements between a dealer and a retailer is that the dealer sells the goods to retailer on credit for a fortnight.

3. The present sugar contract is most defective. It is a one-sided agreement which binds the dealers as much as possible but leaves the manufacturers out of its clutches which is one of the reasons why the dealers keep very little of Indian sugar in stock. In our opinion the standard contract as adopted by the All-India Sugar Merchants Conference should be brought into force, a copy of which is enclosed herewith for your perusal.

4. The average price of sugar in 1930 was about Rs. 13-8 per maund and since then it has been gradually decreasing and was abnormally low in season 1935-36 when the prices came down to Rs. 7 per maund to Rs. 7-8 per maund. In the present season the prices came down and reached to a level of Rs. 5-8 to Rs. 6 per maund. (We have no data with us for the last seven years hence no separate prices have been quoted by us.)

5. Yes, there is a difference of about 2 to 3 annas per maund in wholesale and retail prices. The reason being that the goods are sold on credit by wholesalers who want to get the best value of their money.

6. Dealers stock their sugar in ordinary kuchha and pucca godowns. A lot of sugar is deteriorated in storage on account of dampness, etc.

7. Yes, Indian sugar deteriorates more rapidly than Java and other imported sugar. Yes, there had been a lot of improvement in the keeping quality of the Indian sugar lately.

8. The preference of one sugar to the other depends much upon the price because India being a very poor country cannot afford high priced sugar. There is no doubt that imported and Java sugar is much better in quality than Indian sugar but the prohibitive price of same does not allow Indians to consume that sugar and as Indian sugar is cheaper so Indians chiefly consume it. The Europeans being much well off than Indians financially prefer Java and other imported sugar as the imported and Java sugar is not only rich in vitamin and quality but it has got no or little molasses.

9. The present quality of Indian sugar is not at all good, rather much more inferior than imported and Java sugars. The Java and imported sugars are of bold grains, white in colour, beautiful appearance, contains very little molasses whereas Indian sugar is of small grain, dull looking, brown colour no standard and has got high percentage of molasses.

10. The manufacturers carry a stock of about half of their products after the crushing season is over but the dealers only stock as much as they require for their sale of one month which is at once replaced as the former stock is cleared. We would also point out that the sugar manufacturing season in India is now about 5½ to 6 months and not limited to one-third of the year as shown by you. The mills get credit facilities from the banks against security of the products and their assets paying them interest on the overdrafts and the dealer usually make arrangements with their bankers to allow them credit against railway receipts and other securities and pay them heavy interest. The bank allows 75 per cent. credit over total stocks and 25 per cent. are paid by the dealer. Some dealers also negotiate among themselves in the bazar as well. The chief arrangements between the sugar stockists and banks and other financial agencies is that of credit against sufficient securities on heavy interest.

11. We do not think any marketing survey is necessary as both the manufacturers or their agents and the dealers possess required knowledge of consumption and distributing centres.

12. Yes, a Central All-India selling organisation will be very helpful at the present moment provided it is worked honourably and sufficient Government control is kept over same.

13. At the present moment it will not be wise to fix a standard of Indian sugar as financially weak mills of India are not provided with such strong backing as would allow them to stand in competition with other financially strong mills of India if a standard grade is fixed for all. The result will be that good many mills will be closed and a lot of national money will be thrown away. Indian sugar standards prepared by the Director of Sugar Technology may, however, be adopted advantageously.

14. (a) No business has been done by us on the basis of sugar standard prescribed by the Director of the Imperial Institute of Sugar Technology in India except in one case. The factories have not adopted these standards with a very few exceptions.

(b) As far as we think no use have been made of these grading for grading purposes up till now due to lack of support from manufacturers.

15. In the light of our above replies we would reply this question in negative.

16. The establishment of future and terminal markets will be appreciable but a central selling arrangement as pointed out in our reply to question 12 and as there are at present cement, hessian and jute selling organisation in India will be best of all.

17. The normal sugar consumption of India to-day is about 1,000,000 bags per month, all together. This can be increased by intense propaganda work financed and managed by the Government as the sale of the Indian Tea Cess Committee. This should be done not only in towns but in small villages as well. Lantern slides showing the usefulness of sugar together with oral lectures and literatures will be still more beneficial. Sugar and tea being sister commodities sugar manufacturers may be asked to make contributions towards the existing tea propaganda just to enable the work to be done on a wider scale as increase in use of tea automatically means greater consumption of sugar.

18. Factory-made sugar has almost monopolised the sweetmeat trade in India. The ratio of factory sugar to gur used in sweetmeat trade to-day is 95 per cent. to 5 per cent., the reason is not far to seek. The extreme cheapness of Indian sugar to-day has been able to make this.

19. If the Government helps and finances private concerns we are of opinion that the manufacturers of sweets and syrups, fruit preservation and candies can be started with advantage in India by private concerns. As a matter of fact there are few such concerns still in India but on account of the want of public and Government help them are not thriving.

20. We do not possess any data on the subject. We may, however, refer you to Messrs. Bird & Co.'s weekly bulletins for the period in question.

21. No, we do not believe that the Java or imported sugar has been landed in India at an unremunerative price in any year since 1930.

22. No sugar has been exported from India either by sea or by land nor we think it can be sent out expect to Burma as the World Sugar Conference held in London recently made it clear in strong and emphatic words that "India can export only to Burma" and to no country else so the latter part of your question needs no reply.

23. The imposition of sugar duty in 1934 had not a disastrous effect as the then prevailing price in the market which gave sufficient profits to millowners who did not grudge parting with a portion of their profits for the gains of the Government, but the imposition of duty in the year 1937 crushed the millowners like anything as the present market price is such that the millowners not to speak of profits cannot get even their cost price and naturally in such circumstances this duty has proved to them "The last straw on a camel's back" which ultimately had broken its backbone. Dealer being the third party neither lose nor gain by it.

24. The present marketing arrangements are far from satisfactory. Only a few distillers and tobaccoists buy same and would pay only a nominal sum for same. The production being very heavy a large quantity remains unsold and is wasted. We have been given to understand that a new limited concern has been started but we have as yet to see its result.

25. There is no export of molasses as yet to our knowledge. Yes, if sufficient freight concessions and loading arrangements are made by the Government, it can be sent to Europe and other wine producing countries who can make the best use of it.

(4) *Replies to General Questionnaire, dated the 14th June, 1937, furnished by Kashi Ram Kanhaiyalal, Nayaganj, Cawnpore.*

1. Cawnpore and Calcutta.

2. (A) Through Agents and Brokers.

(B) Through Brokers only.

3. The present sugar contract form is suitable in our opinion except clause relating to quality wherein it is mentioned that the Mills despatch "(Fair average quality)". This clause should be modified with the remark of standard quality instead of fair average quality.

5. No big difference remains between the wholesale and retail prices.

6. For storage of sugar, dealers have their private godown arrangements in Cawnpore and Port Trust Warehouses in Kantapukur (Calcutta).

7. Yes, Indian sugar deteriorates more rapidly than Java. There has been some improvement in the keeping quality of Indian sugar.

8. Java sugar is preferred to Indian sugar only by European Hotels and some English People as it is whiter and clarified.

9. Some of the Indian Mills resemble Java quality. Indian sugar lacks in whiteness and clarification.

10. The stock of 50,000 tons has been carried over in the season 1936-37.—

(A) 32 thousand tons remained with the manufacturers.

(B) 18,000 tons remained with the dealers.

Most of the Mills have their arrangements with the Banks for financial facilities in keeping their stocks. An interest of 4 to 5 per cent. is generally charged by the Banks. The dealers purchase forward delivery sugar and keep the same in Mills godowns. They take delivery of their purchased sugar within stipulated time.

11. Yes, Marketing survey of the sugar industry would be advantageous.

12. Yes, we favour a Central All-India Selling Organisation in order to control over-production of sugar and fixation of prices.

13. We are in favour of the standardisation of Indian sugar. We suggest that it may be standardised on the basis of Director of Institute of Sugar Technology.

14. (A) No business has been done for the factories to whom we represent on the basis of sugar standards prescribed by the Director, Imperial Institute of Sugar Technology.

(B) No use has been made of these standards for grading purposes.

15. The standardization of sugar should be adopted as the Mills present certain samples and despatch the goods of inferior grade.

16. Yes, Futures or "terminal" market if established in Cawnpore will be useful for the improvement of sugar marketing in India.

17. 1,150,000 tons of Indian sugar including foreign imported sugar is consumed in India and we do not think any possibility of consuming more sugar.

18. 78 per cent. factory sugar has replaced gur specially in sweetmeat trade.

19. There is very little possibility of starting further subsidiary industries, such as manufacture of sweets and syrups, fruit preservation and canning, etc.

20. No correct information has been obtained.

21. No imported sugar has been landed at unremunerative prices in any year since 1930.

22. There has been no export of Indian sugar by sea and by land.

23. (i) Excise duty of 1934 effected the Mills badly.

(ii) The additional excise duty of 1937 proved most detrimental to the interest of cane-growers (farmers).

24. There are no marketing arrangements for molasses.

25. There is no export of Indian molasses to foreign countries.

(5) *Answers to Questionnaires by I. T. Parekh, C/o Messrs. Parekh & Co., Sugar Merchants and Agents, York Building, Hornby Road, Fort, Bombay.*

83. The principle sugar markets in India are as under Bombay, Ahmedabad, Nagpur, Cochin, Calcutta, Cawnpore, Delhi, Amritsar, Muzaffarnagar and Karachi.

84. (a) Sugar sales are generally effected through the intermediary of Sole Selling Agents or Provincial Agents, who stand as guarantee to Mills for due fulfilment of the contracts by buyers. After last year's experience some of the Mills have opened Selling Depôts at principal markets. Some have stationed their paid servants at different places who receive regular consignments from Mills. They generally sell Railway Receipts outright. Many of the Mills are maintaining regular stocks at some centres. It is regrettable to note that Mills pay more attention to their relatives or to the big depositors, while appointing Selling Agents even if such depositors are quite inexperienced in the line. The policy of selling sugars to consumers direct in packets of 5 lbs. or 7 lbs. is also followed by some Mills. This is detrimental to the interest of trade in general. Middlemen having been thus wiped out of the field there remain few chances for fluctuations in the market and there is therefore no incentive to big operators. In some cases Mills and their Sole Selling Agents have been sending their Canvassers to book orders directly from merchants. Most of the Mills are having more than one Broker or Agent in one market. This is undesirable. It creates unhealthy competition, profitable to nobody.

(b) Dealers and merchants buy big quantities from Mills, and split these in small lots and sell to retailers to whom they give credit of 7 to 30 days. The present sugar contract though recently improved is still one-sided. It protects the sellers more than buyers. Leaving aside the other terms of minor importance the conditions regarding quality and arbitration demand a more equitable change. As regards quality, sugar should be sold either on sample or on the basis of Indian sugar standards; or more preferably on Dutch Standard No. 25 and or higher. As a common practice, Mills in Java tender higher quality of sugar though the goods are contracted for Dutch Standard No. 25. Likewise if Indian Mills follow a similar practise much of the present troubles regarding quality and claims would disappear.

As regards arbitration, it is better to have arbitration Board or panels, at all chief marketing centres, composed of one member selected from among merchants and another from among the Millowners or their representatives. Such Boards or panels should immediately on arrival of goods undertake to survey same, on complaint being filed. This will avoid delay in disposing of the claims and will instil confidence in the trading public which of late have become very distrustful of the Mills on account of some sad incidents here and there.

It is imperative that all Mills must have one standard contract. Even though the Indian Sugar Mills Association have approved a general form of sugar contract there are instances where some of the Mills or their Sole Distributors are selling on their own contracts containing several extra conditions. Immediate retailer's prices fluctuate proportionately with those of wholesale merchants. But, the prices of Grocers who sell directly to consuming public do not fluctuate proportionately. Since immediate retailers are also running risks, though small; they have to adjust their sales according to their purchases soon, whereas the Grocers who are giving credit and who are thus placed in an advantageous position of distributing to the consumers directly are able to maintain their profit margins. It is worthwhile noting that in selling Indian sugar Grocers are making more money in view of the various qualities of Indian sugar differing in values by about a Rupee and more sometimes. While in selling Java sugar these Grocers were barely securing a return of their cost price.

88. Dealers generally store sugar in their ordinary pucca godowns or in Warehouses, where available. No godowns are specially constructed for the

purpose. In Summer and Winter deterioration of sugar is not so marked as it is in Monsoon. At times, in Summer, sugar having unwashed or partly washed (yellowish) grains sweats. Merchants take special care in Bombay during Monsoon to protect their stocks by tarpaulins, wooden planks, matting and spreading lime on the floor. Though such steps are taken in United Provinces and Bihar sugar appears to be more susceptible to climatic effects there—

- (1) Well refined sugar does not deteriorate as a general rule if carefully stored.
- (2) Sugar with any traces of Molasses is easily susceptible to deterioration specially in Monsoons.
- (3) Sugar railed in Summer and Winter, and stored and stacked carefully in Bombay does not deteriorate as much as sugar railed and stored in Monsoons.
- (4) Careful stacking goes a longway to protect sugar.

It should be noted here that due to climatic conditions in Colombo even Java Whites of ordinary crystals are unable to stand the strain for more than two/three months. Therefore, Colombo prefers generally Java Whites of "Bold grains". Deterioration of quality and damp arrivals are more pronounced in Monsoons. This might be due to, either (1) Mills railing damp sugar from their stocks, or (2) to the damage done at the transferring stations either on line or on the Ghats where discharging arrangements are reported very poor. Merchants are between the devil and the deep sea. Mills refuse responsibility for dampness, as they sell f.o.r. Railways refuse their liabilities as they carry goods on "Owners' Risks" with such remarks as they like. Business in Monsoons therefore is treated as more unhappy by merchants. Even though rains in Java are usually heavier than what we experience in India and though sugar stored for about three years was coming to India from Java some thousands Miles off, instances of complaints of dampness in sugar were practically absent. It is worthwhile the trouble and expenditure by Railways concerned to build pucca damp-proof godowns at transfer stations where Mills can store their stocks by paying a reasonable rent. When our sugar has won an All-India Distributing aspect such a venture either by Railways or public limited concerns will be a paying proposition. Mills also will be saved the trouble and charges of storing and stacking their products at the Mills. Dryness in goods will be more assured.

89. Indian sugar deteriorates more easily than Java sugar. However, beet refined sugar from Continent does not stand the climatic conditions so well as does Java. The reasons for this is that every bag of Java sugar is well scrutinised before it is passed for export. Bags containing even a small percentage of (unwashed) yellowish grains are rejected and sold as rejected sugar.

"Bold Grain White" Indian sugars generally keep comparatively well in all seasons. Among these may be named Marhowrah, Ryam, Champaran, Motipur, Rampur (Buland), Saraya, Harinagar, Baitalpur "Bold" and few others.

90. Consumers like European-managed Hotels, Aerated Water factories and some Restaurants show still some preference to Java sugar. The reason appears more of a psychological nature.

91. In cases of Rampur (Buland), Harinagar, Saraya, Marhowrah, Ryam, Champaran, Motipur, Baitalpur "Bold" and others the quality of Indian sugar is equal and even sometimes better than Java or other imported sugars.

Indian sugar of ordinary crystals is inferior to Java and other imported sugars in so much as the former lacks uniformity of quality and colour as well as resisting power against climatic changes. At times, Indian sugar of crystal No. 1 is found to contain more of half-washed or unwashed crystals.

92. (a) Carrying the burden of stocks depends usually on the tendency of the market. When prices tend to a higher level the merchants, distributors and retailers carry 75 per cent. of the stocks whereas Mills do so for the balance 25 per cent. However, when the market is sagging or flat, the Mills have to bear the burden in carrying most of the stocks on account of trade buying from hand to mouth. There is a general tendency on the part of Mills to sell away all their productions during the crushing season itself though it is admitted by all that what they produce in about one-third of a year is meant for being distributed the whole year round. This evidently tells upon the market more seriously when trade is averse to carry the burden.

(b) Usually Mills are helped by Banks with funds to carry their stocks charging interest from 4 per cent. to 6 per cent. according to the mutual arrangements. Merchants, however, are rarely financed by Banks. They carry their stocks with the help of their own investments or from loans or deposits received from private parties. Here and there, there are instances when merchants have sought and secured help from local Banks paying a rate of interest varying from $4\frac{1}{2}$ per cent. to 5 per cent.

It is not out of place here to mention that Indian Banks like Imperial Bank of India, The Central Bank of India, Ltd., and The Bank of India, Ltd., do not encourage merchants to stock goods so much as they do to the Mills. Merchants usually find more favourable terms from foreign Banks (including British Banks). Every Mill should have arrangements to store $\frac{1}{3}$ of their total production. This will eliminate chances of forced sales by Mills simply for want of storing arrangements.

93. Marketing survey of the Sugar Industry at this stage particularly, is a necessity. Surely this will prove advantageous and will be helpful both to Industry and trade. While surveying, the following points should be carefully investigated:—

- (1) Statistics regarding consumption at every marketing centre.
- (2) Withdrawal figures from Mills.
- (3) Potentialities of expansion of consumption.
- (4) Possibilities of distribution of stocks visibles and invisibles.
- (5) Proper margin of profit to cane-grower, manufacturers and merchants.
- (6) Checking practices which tend to retard the natural growth of profits mentioned in item (5) above.
- (7) Checking unnecessary competition of lowering prices.
- (8) Checking the evil of cornering of the commodity by few individuals or Mills.
- (9) Stopping the Managing Agents or Mills from entering into either direct or indirect purchases or sales of a speculative nature on their own or Mills' account.
- (10) Difficulties of distributing sugar from Mills by Railways or Steamers to consuming markets should be studied and remedies suggested.
- (11) To determine whether it is advisable to substitute Indian technical staff only, in place of foreigners.
- (12) To determine whether it is advisable to restrict the Selling Agencies to Indians only when the protection is given at the cost and for the benefit of Indians.

94. Central Selling Organisation on the model of the Trust in Java is most essential at a time when inter-competition is rampant. This will stop an early disintegration of an infant Industry reared under the protection of Tariff Walls. This will protect merchants also there being one seller. Merchants too will have the facility of watching the movements of one party only. If a Central Organisation of all Mills is not possible at this stage, at least such an organisation should be brought under existence of Mills who are at present competing in and depending solely on Port.

markets like Bombay Calcutta, Madras and Karachi. If this too is found impossible then zoning of the distributing markets for Mills should be resorted to. Bihar and United Provinces being only two centres at present where congestion is great. Mills in these areas should necessarily be pooled to avoid inter-competition which is unprofitable both to merchants and Mills. Southern India, Deccan, Punjab, Bengal and Burma having their own consuming markets may be left to themselves for the time being.

95. Standardisation of quality in Indian sugar is the most important factor as now this has become an All-India Trade. Instead of standardising the quality on the merits of both whiteness and grains separately as is done in Indian Sugar Standards, it would be safer to adopt a Java Standard like Dutch Standard No. 25 on which business contracts should be regulated. The tendency of tendering better sugar than the contracted Dutch Standard No. 25 as is generally shown by Java Millers should be cultivated and scrupulously followed by the Indian Manufacturers. This will do away with the usual complaints and claims with which the Mills are worried at present. Sugars superior in grains (bolder in grains) should be sold under separate heads as "Bold" and "Extra Bold". In short, Indian crystal No. 1 should be standardised on the basis of "not lower than Dutch Standard No. 25". If there be any objections to this suggestion an alternate course may be followed by fixing the standard on the basis of one or two Indian Mills, the products of which are taken by the market to be of uniform quality. For example, Sakri, Lohat or Baitalpur may be taken as a basis and contracts should be entered into on concise nomenclatures such as "LHT" "SKI" "BALR" "and or similar sugars". It is worthwhile reminding here that Java in the early stages of her Sugar Industry followed this course and the sales were effected on the basis of "TMO" and or "G.W." and or similar thus standardising the quality of White Java produced in the Island on the products of any of the two Mills whose names were concisely put as "TMO" and "G.W.". Thus the possibilities of tendering, in place of good crystal No. 1, inferior sugars that are prepared at the fag end of the crushing season from over-ripened cane and which are decidedly inferior to their respective crystal No. 1, which in turn is supplied during the mid-season and is manufactured from fully ripened cane. Sugar inferior to standard should be marked as "Lot Nos.", and should be sold on the basis of samples only.

96. Only two Mills, Tamkholi and Riga are selling and that too this year, on the standards prescribed by the Director of Imperial Institute of Sugar Technology.

To my knowledge nowhere grading on these basis have been made till date.

Tamkholi had a fixed standard quality this year and therefore good business at well maintained prices is reported done in this sugar.

97. These standards are too clumsy and therefore difficult to follow by merchants and retailers all over India. Something quite simple and easy to be followed by the unlettered traders all over the country should be substituted in place of the existing standards of a complex nature. For further elucidation, please refer to my answer to question 95.

98. Sugar trade is only second in importance to Cotton. It is really a pity that while other staple commodities in India have each a "futures market" Indian sugar has got none. A Sugar Terminal Market on the model of East India Cotton Association, or the London Terminal Market or The New York Coffee and Sugar Exchange should be brought into existence. This will afford to Mills the facilities of hedging the expected production of the new season. Their subsequent hedge-lifting against ready sales to trade will stop premature demoralisation of the actuals. This will also distribute the burden of the commodity among Millers, Professionals, Outsiders, Distributors and Retailers. A healthy speculation in the market will be created which in turn will check the forced uneconomic prices. This year, outsiders entered the field under the heat of general boom in other commodities. But for want of a Terminal Market they were forced to

liquidate at heavy losses thus hitting harder the genuine trading public. Having a production of more than a million tons the burden should not be left only on the heads of Millers. This should be evenly distributed to keep the fabric of the market healthy.

Absence of a Terminal Market can well be interpreted as a cause for the present slump in prices of Indian sugar. When prices of Java sugar since Diwali have gone up by Rs. 2 per cwt., Indian sugar has staged a setback in prices by about Rs. 1-8 per bazar maund during the same period. Merchants in Port markets are repenting for having lost the opportunity of dealing in Java sugar which would have brought profits to them.

99. Normal consumption of sugar in India is about 1,150,000 to 1,200,000 tons. It is *per capita* near about 7-25 lbs. There are big potentialities of increasing the consumption of sugar if advertising campaign is properly launched. Further, a Sugar Cess Committee on the model of Tea Cess Committee should be formed to foster the consumption of sugar. An increase of even half a lb. *per capita* will mean an increase of consumption by about 80,000 tons. Progress of civilisation is also aiding the consumption of sugar. "The higher the standard of civilisation the more the consumption of sugar." Masses should be enlightened to use white sugar instead of Gur.

100. Sugar is fast replacing Gur especially in sweetmeat trade. Civilisation has changed the general taste and people are freely using sweets prepared from sugar at the cost of those prepared from Gur. Of course, it is a question of price too, sometimes, and poor people prefer whatever is cheaper.

101. There is a big scope for starting and developing subsidiary Industries like confectionery, manufacture of chocolates and other sweets as also preparing of Syrups, Jams and Sweet drinks, food preservation and canning Industries. Our imports in these lines are on the upward grade. If our Government were to help us by raising Tariff Walls against such foreign imports of canned fruit and sweets our local manufacture would thrive, we having a bumper fruit production in our country. Northern India such as Punjab, and North-West Frontier Province would be an ideal place for starting such Industries. Mills can also manufacture sugars of the type of W. S. R. and Pandge, the former of Holland and the latter as manufactured in Java. Efforts should be directed in preparing soft sugars which are imported from China and Japan. All the above mentioned special quality sugars are sold to-day in Bombay by Rs. 5 to Rs. 6 higher than the ordinary Indian sugar. If the example of raising higher duties on sugar candy is followed with regard to these special quality sugars it will encourage the manufacture of those by Indian Mills.

103. Java sugar business was done in November, 1934, for January-March delivery at Rs. 3-2-3 per cwt. c.i.f. Bombay. The reasons were:—

- (1) Heavy accumulation of stocks in Java.
- (2) Phenomenal drop of London Terminal Market which touched 3s. 9d. for December position.

Besides this, a parcel of French Crystals and a cargo or two of Russian sugar were booked at round about Rs. 3-10. These transaction were also due to the lower prices obtainable in London Terminal Market and due to exportable surplus with Russian at the moment.

Further, Mozambique sugars were sold below cost of production. They had surplus and there was no other outlet. Losses sustained through such sales were made up by selling sugar at 4s. higher in their own Portuguese possessions like Goa and others. A cargo of Ecuador sugar in cloth-lined paper bags from Southern America was landed at Karachi. The reason may be attributed to the surplus stocks and exchange difficulties.

104. So far there has been no exports of Indian sugar by sea. However, Indian sugar is being exported by land route to Native States of Kathiawar, Nepal and Kashmir. It should be noted here that some Maritime Native States have raised special Tariff and thus have virtually stopped the import of Indian sugar in their territories. They are still importing Java sugar with a view to collect Import Duty.

Afghanistan by land and Ceylon by sea are the nearest neighbouring outlets for Indian sugar and efforts should be made to monopolise them. A quantity of about 100,000 tons of undigested surplus production of Indian sugar can thus be marketed. Negotiations with respective Governments should be started to find out ways and means.

There are chances of our surplus sugar being exported to United Kingdom Ports if we are allowed to export our sugar to these Ports, under the "Preferential Certified Colonial Head" which enjoys a preference of 9s. 4d. over other foreign sugars exceeding 99° polarisation. Under the "Preferential Empire Head" in United Kingdom Tariff we have only a preference of 5s. 10d. The following comparative table will clarify the issues:—

	Full duty per cwt.	Preferential Empire per cwt.	Preferential Certified Colonial per cwt.
	<i>Sh. d.</i>	<i>Sh. d.</i>	<i>Sh. d.</i>
Sugar of a Polarisation exceeding 99° . . .	11 8	5 10	2 4·7

The outlook for international sugar appears better than before. Prices are moving in an upward grade. Quotas established by the International Sugar Conference, and the tightness of statistical position of free sugar should vouchsafe a further advance on present level of prices of foreign sugars. To-day, when Mauritius crystals are selling on a parity of 12s. per cwt., c.i.f. London, and or Liverpool, Indian sugar which is equally good as Mauritius in quality and whiteness can be exported to and sold in United Kingdom markets at the same prices if not more. The following table can well explain the situation:—

	Rs. A. P.
Present price available in Indian market for Indian White Sugar equal in quality to Mauritius White per bazar maund . . .	5 14 0
Less—Excise refundable per bazar maund . . .	1 8 0
	<hr/> 4 6 0
Add—Railway freight from Mills to Port of ship- ment per bazar maund (Calcutta) . . .	0 12 0
	<hr/> 5 2 0
Prices per cwt. for above	7 0 6
Add—Steamer freight, Insurance and shipping charges	0 15 6
	<hr/> 8 0 0
At exchange rate of 1s. 6d.	12s.

It can be noted from above that even to-day there is an exportable parity for our Indian sugar to be shipped United Kingdom Ports if only we get the benefit of "Preferential Certified Colonial" import duty. In United Kingdom the Duty is fixed according to polarisation, but this only refers to

raw sugar. India can export to-day White Sugar similar to Java White in which case the Preferential Empire Duty is 5s. 10d. per cwt., never mind the polarisation. White Sugar is always charged at 5s. 10d. per cwt. The British Government have made arrangements with some parts of the Empire to give a quota for certified sugar, but India is not one of them. Mauritius exports about 250,000 to 280,000 tons to United Kingdom and has a quota of about 200,000 tons of "Certified" sugar with lower import duty of 2s. 4-7d. per cwt. The quota for "Certified" sugar must be arranged between the Indian and British Governments.

The above issue is worthwhile receiving the attention of our Government at an early date. It is also clearly visible that great injustice has been done to India by shutting her possible exports to other countries except Burma, by the recent agreement in the International Sugar Conference at London.

Even as regards exports to Burma, merchants are encountering a number of difficulties. The Burma Government levy their own Import Duty whereas Indian Government gives a refund of like amount. But such refunds are granted only to such consignments as are directly booked from Mills for destination Burma. Here too, there are complaints of higher clearing charges fixed by the Railways, mishandling of cargoes and shortweights at destination for which nobody shoulders the responsibility. One fails to understand why goods stored at Calcutta when exported to Burma are not subject to the usual conditions of Duty refund as is the case with consignments directly from Mills. This has debarrd the lightening of the burden of the accumulation of stocks at a guiding market like Calcutta which ultimately has told on the prices.

105. In 1934 the new Excise Duty of Re. 1 per bazar maund came into force. This created consternation in both the Industry and the markets. The prices, however, ultimately rose proportionately and thus transferred the burden on consumers on account of the crop being smaller and Punjab and Deccan having suffered from draught and frost. There was good demand from the centres above referred to.

The effect of further imposition of Excise Duty in 1937 proved a catastrophe to the Industry. Except a temporary rise, though proportionately smaller than the amount of increase in Excise Duty, the market staged a setback and the burden has been saddled on the Industry, crops being good and supply abundant.

106. There is a limited market in India for Molasses which are used in preparing smoking-tobacco and for mixing with cattle-food. Few distilleries also are buying Molasses according to their capacities. There are big exporting possibilities of this product. The Indian Molasses Company, Ltd., have been started with British capital for the purpose of exporting Molasses from India. Since they are the only party interested in this trade they dictate their own prices and terms which are not always suitable to many of the Mills who have to throw away their Molasses as waste. It is advisable that Mills start their own exporting Company under the supervision and guidance of the Millowners Association.

Government should encourage, by giving free licenses to Mills, the erection of distilleries to prepare alcohol, tinctures and other such by-products from Molasses. This will provide an extra earning to the Mills and will be a boon particularly when lower prices of sugar make inroads on their profits.

108. Since 1932, the development of Sugar Industry has been phenomenal. Against 32 factories working during 1931-32, we have to-day 156 factories all over India, manufacturing sugar on modern methods. The impetus to the Industry was more apparent as the protection of Rs. 7-4 given by the Sugar Act was in practise raised automatically to Rs. 9-1, 25 per cent. surcharge amounting to Rs. 1-13 per cwt., being added to the original Duty. The number of factories doubled and more orders for new Mills were placed during the period till the imposition of Excise Duty was first brought into

force in 1934. The production of factory sugar showed a perpendicular rise:—

	Production of Factory sugar about Tons.	Factories.
1931-32	480,000	22
1932-33	650,000	57
1933-34	725,000	112
1934-35	780,000	130
1935-36	925,000	139
1936-37	1,100,000	156

Protection enjoyed proved also beneficial to agriculturists in so far as they have in sugarcane a cash crop giving comparatively higher return than other staple produce. Over 250,000 Labourers have found work. About 2,000 Technicians and about 10,000 educated people have found employment. Drain of millions of Rupees formerly spent in purchases of foreign sugar has been effectively stopped. Imports from Java to British India have dwindled as under:—

	Imports of Java sugar. Tons.
1933-34	245,000
1934-35	325,000
1935-36	213,000
1936-37	40,000

In short, it has proved a boon to the half starving ryots of Bihar and United Provinces besides yielding a good return to Capitalists who have invested more than Rs. 30,00,00,000 in this new adventure.

Sugar-Candy.—This Industry in India is run on the basis of cottage Industry. It faced heavy dumping from Japan on account of devaluation of Yen and available cheaper supply of Brown sugar from Java. Government have done well in raising the Duty on sugar-candy thus giving a much needed protection to the cottage Industry which is spread all over India.

109. The Indian Sugar Industry requires the continuation of present protection for at least a further period of eight years. Any thought of reducing the help given will spell nothing but disaster. In principle protection should be reduced or withdrawn only after the Industry is firm on her footing.

The past seven years have been a period of infancy for our Industry. Our factories are now producing enough to fill the sugar bowl of India. Quality also has to some extent improved, though further improvements are still imperative. Our Industrialists were quite new to the line. They have also still much to learn. It is now only that the period commences to tackle marketing and distributing problems. Present uneconomic prices have put the Industry on an unstable basis. Sufficient time should now be given to build up a sound marketing system. Adjustments to new problems that are cropping up also call for a further breathing time. It should be noted here that our Indian Sugar Industry of seven or eight Summers existence is always open to the onslaught of Java Industry of a century old. It may come at any time unexpectedly. It has also to fear the possible invasion from Russia, where the Industry and exports are controlled by the States. Following figures

will disclose that Government are making up to a great extent the loss on Customs Duty:—

	About Rs. in lakhs.
Income from Excise Duty	4,40
Income-tax from Mills	70
Customs Duty on machinery and stores	10
Extra income for Railways for carrying cane, stores, spare parts and sugar	95
Income from increased use of irrigation water	5
	<hr/> 6,20 <hr/>

Following are the figures of Customs revenue earned by the Government in the years 1931 to 1936:—

	Rs. in lakhs.
1931-32	8,00
1932-33	6,75
1933-34	4,75
1934-35	3,75
1935-36	3,25

There are two things which are vital in the production of sugar. One is man power and the other is money. Without money plants cannot be maintained. The continuing cost of maintaining plants are extremely large. The pest disease, unexpected draught, hurricanes, floods and earthquakes are the relentless enemies of the sugar industry regardless where it is located. Against elements of destruction of this kind the sugar industry must needs have the years of plenty to forestall the ears of famine. Consequently looking at the picture in an unbiased way, I recognise the fair necessity of the industry being conducted on a profitable basis if it is to withstand the ravages of such unforeseens. Present lower prices with any reduction in present protection will ruin the industry. It should also be noted here that countries like Germany, Czechoslovakia, France, Hungary, Poland, Soviet Russia and United Kingdom are still enjoying heavier protection in the shape of prohibitive import duties than what we do to-day in spite of the fact that they have their sugar industries established since long and are having the advantages of latest scientific researches both in manufacture of sugar and cultivation of beet, yielding the highest percentage of results. Import Duties in various countries on refined sugar can well be compared from the following table:—

	In U. S. Cents per lb.	Per cent. S. d.
Germany	5.87	about 27 0
Czechoslovakia	6.42	„ 29 6
France	5.13	„ 23 6
Hungary	6.05	„ 28 0
Poland	9.06	„ 41 6
Soviet Russia	150	...
	per cent. <i>ad valorem</i> .	
United Kingdom	2.6	about 11 8
	U. S. Cents.	
India	3.1	„ 14 0
	U. S. Cents.	

It should be noted also that, except in United Kingdom consumption taxes on imported sugar are levied which too are equally heavy.

Duty on imported sugar in United Kingdom appears smaller. The chief reason is that United Kingdom has to depend largely on imported sugar nearly to the extent of 150,000 tons per year from outside countries. Further, heavy subsidies are given to beet-growers in United Kingdom.

India is the biggest producer and consumer of sugar since time immemorial. If sugar Industry is allowed to develop to her fullest extent, England in time of war can well depend to draw her requirements from India, instead of depending on Cuba and Java as was the case during last war. With the help of Indian sugar, rationing of sugar in United Kingdom in time of war or other such eventualities can well be avoided.

It should not be forgotten also that even during the last seven years of its infancy when the Industry was just springing up it had to face difficulties thrice, once in the form of fixing of cane prices, then in the form of imposition of Excise for the first time and lastly in the recent increase of same.

110. For the efficient running of the Industry following items deserve careful consideration:—

- (1) Ample and guaranteed supply of improved quality of cane, giving higher percentage of sucrose.
- (2) Efficient management and up-to-date scientific methods of manufacturing sugar.
- (3) Marketing of the finished goods.

For the guaranteed and ample supply of cane zoning of area should be undertaken. A minimum price of annas four per bazar maund should be enforced. This will give encouragement to the cultivators for sowing special sets giving quantity of cane and quality of sugar. Co-operative Societies for supplying special sets of improved varieties of canes, sufficient chemical manures and other farming implements like tractors, should be formed and encouraged. Prosperity of farmers means prosperity of the Industry.

Qualified technicians and staff should be given opportunities to meet in conference at least twice a year to exchange views on the developments and difficulties encountered in manufacturing, storing and marketing of the sugar.

If no single selling organisation is expected to come in existence then marketing of sugar according to zones should be enforced. Licenses should be issued to existing factories and should be sparingly given for new ventures, keeping in view that the production should not outstrip the consumption.

Factories working and starting in Native States should also be brought under the general control of conditions applicable to factories in British India. More experimental stations should be opened. A statistical Bureau should be established to supply, fortnightly or monthly, accurate informations and estimates of acreage, productions and withdrawal as is done in Java and other countries.

Government should keep themselves well informed and in constant touch with the stock position of sugar and should enforce regulated periods of the opening and closing of the crushing campaigns, whenever heavy surplus from previous season is carried forward.

(6) *Answers to Questionnaires furnished by F. C. Batticala, Esq., of Messrs. J. Tremroze & Co., Bombay.*

83. There are about five major sugar marketing centres, viz., Calcutta, Bombay, Karachi, Madras. Besides there are several small distributing centres due to their Geographical situations and various other factors such as Ahmedabad, Akola, Cochin, Calicut, etc.

84. (A) Usual arrangement for sale of Indian sugar between Manufacturer and dealer is on f.o.r. basis factory delivery within particular period

per maund of 82½ lbs. The dealers buy f.o.r. Factory and subsequently give despatching instructions where the sugar is to be despatched. On presentation of Railway Receipts the buyers have to pay to sellers in case within 3 days.

(B) Dealers sell to retailers after the arrival of the goods after adding all the charges such as Railway Freight, Municipal, Octroy Duty and other charges on *ex-godown* basis per maund or cwt. according to local standard.

85. At present there is no Standard Contract Form. Each Mill has its own contract form. Recently a strong propaganda is being carried by Indian Sugar Merchants' Conference to have a standard contract form but with little success. The present contract form appears to protect more interests of sellers than buyers. There should be uniform and standard contract. The contract should be so devised as to protect the interest of both buyers and sellers on principals of equity and justice keeping in view the condition of the industry and various other factors, etc.

87. The difference between wholesale and retail prices does not fluctuate widely except in some exceptional cases and that too also temporary.

88. In big places like Calcutta and Bombay the dealers at times take advantage of storage facility of Port Trust Warehouses. Generally the dealers keep their own godowns for storing. Indian sugar is likely to deteriorate especially during monsoon. The contents usually get damp and at times slight change in colour is also apparent.

There is a great improvement in Indian sugar quality especially this year owing to last year bitter experience.

89. It all depends upon price. There is a belief widely prevalent and to some extent true that the Indian sugar is never uniform in quality which creates preference for Java sugar to Indian sugar.

90. For preparing solution of sugar, Java sugar is preferable to Indian sugar. Syrup, Sweets, Aerated Waters, etc., prefer Java as the solution of Java sugar will be uniform throughout.

91. Certain few factories do Manufacture sugar equal or at times better than Java quality but majority of factories has not attained same standard. The Indian sugar is inferior to Java sugar in fineness, colour and uniform size of grain. Indian sugar does not attain all the three things simultaneously.

92. It all depends upon the trend of the market. Moreover delivery period is so arranged as to last upto the beginning of next season. At times the stocks are being carried at factories or at consuming centres as the case may be. In consuming centres the Banks are ready to finance. Usually dealers finance themselves for their stock.

93. The marketing survey of sugar industry would prove to be useful as at present, the marketing of sugar is problem of problems with the Industry due to various factors.

94. If it is possible, all-India selling organization will be very helpful to industry as there is keen internal competition between Millers and Millers.

95. Standardization of Indian sugars is absolutely essential. We would like standardization similar to Java basis.

96. No business is being done so far on standards prescribed by the Director, Imperial Institute of Sugar Technology according to our knowledge.

97. The Mills must be compelled to manufacture sugars of particular standards and if they manufacture inferior their name should be termed as rejected sugar.

98. The Terminal market on basis of London Terminal market in consuming centres will greatly help industry as it will divide burden between Manufacturers, Dealers and Speculators.

99. The normal consumption of sugar in India is 1,000,000 tons. There are great possibilities of increasing consumption by propaganda, as India

100. Factory sugar to a large extent has replaced Gur especially in making sweetmeats. Yet due to some religious belief it has not replaced totally.

103. In 1935 the Java sugar was sold at the most unremunerative price such as Rs. 3-4 per cwt. c.i.f. Indian Ports. Java wanted to keep Indian market in hand and Java had a lot surplus stock to be disposed off then.

105. We do not think excise has adversely effected the industry. On the contrary the prices have further declined simply due to cut throat competition between Manufacturers.

107. There is possibility of developing export trade of Molasses.

109. The rate of protection should be so arranged that the Industry may be immune from foreign competition at the same time rate should not be so high that the industry may be careless for attaining efficiency. Some danger of foreign competition will keep the industry fully alive to its responsibility.

111. We do not think import duty have adversely affected any other industry.

Enclosure.

Yearly average of wholesale prices for sugars imported into Bombay during 1930-36.

Year.	White Javas.	Brown Javas.	British refined Standard 1st quality.	B. R. B. and/ or Similar.	Granulated Beet.	French Crystals.	Russian Crystals.	Mozambique Crystals. *
	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1930 .	12 8 6	11 11 6	12 11 6	12 12 0	12 13 0	12 10 0	..	..
1931 .	13 9 9	12 10 0	15 10 0	12 13 3	..	..	15 9 0	..
1932 .	15 3 6	14 3 6	15 5 6	..	15 6 6	..	15 2 0	15 3 6
1933 .	14 12 3	..	14 10 6	..	..	..	14 13 6	14 12 6
1934 .	13 4 3	..	14 3 3	..	..	..	..	13 14 0 .
1935 .	13 11 6	..	14 1 9	..	..	13 10 0	..	13 9 0
1936 .	13 7 9	..	13 14 0	..	..	..	12 10 0	13 3 6

N.B.—All the above prices are per cwt. *ex*-Bombay Godowns.

* Extra Bold White Crystals.

Yearly average of wholesale prices for sugars imported into Bombay during 1930-36—contd.

Year.	W. S. R. Crystals.*	British refined 2nd quality.	Polish Crystals.	Egyptian Crystals.	Pandji (Java) Refined.			
					Type 1.	Type 2.	Type 3.	Type †
1930	..	..	..	..	Rs. A. P.	Rs. A. P.	Rs. A. P.	Rs. A. P.
1931	..	..	..	..	..	..	..	..
1932	..	..	..	..	..	..	..	..
1933	16 4 0	..	..	..	..	..	..	..
1934	15 0 3	13 7 6	13 10 6	13 8 9	13 11 0	13 9 0	13 7 0	..
1935	15 0 3	..	..	..	14 1 0	13 13 6	13 12 0	..
1936	14 15 6	..	..	..	13 14 6	13 12 3	13 11 6	14 11 6

37 A

N. B.—All the above prices are per cwt. ex-Bombay Godowns.

*Extra Bold White Crystals.

†Special quality of Java refined sugar. Special quality of Extra Bold Java refined sugar similar to W. S. R. Crystals.

(7) *Letter, dated the 23rd June, 1937, from Mr. Hoosen Kasam Dada, Calicut, Madras.*

I have the honour to enclose herewith my replies to the questionnaire.
2. I am to add that those questions with which I have no practical experience I have thought it best to leave blank and unanswered.

Enclosure.

1. Cawnpore and Mandya (the latter through Messrs. Parry & Co.).
2. According to the fluctuations of the market.
4. To-day's price is Rs. 6-15 to Rs. 7 per 82½ lbs. The difference between the wholesale and retail prices is 6 pies to 1 anna per 82½ lbs.
5. No.
6. Best single gunny in pucca godowns. The Indian sugar deteriorate in quality faster than Java; more so during the monsoon.
7. Slightly improved; not satisfactory enough.
8. Since last one year there is no imports of Java sugar.
9. No. The difference is better known to the sweetmeat maker.
13. Yes. On the basis of I, II, and III Sorts.
14. No.
23. No effect perceptible.

(8) *Letter, dated the 16th June, 1937, from Hajee Habib Hajee Firmahomed, Calicut.*

Our reply to your questionnaire in their order is enclosed herewith receipt of which please acknowledge.

ANSWERS TO QUESTIONNAIRE.

1. Formerly we were dealing with Java ports, but because Java price is now unsuitable we are dealing with places like Cawnpore and surrounding centres, Mysore, etc.
2. We usually buy sugar from manufacturers for cash and we sell sugar to retailers both for cash and credit.
3. We cannot say.
4. No statistics are available at hand.
5. We do not know.
7. Indian sugar cannot be stored for so long as Java sugar as Indian sugar has yet to improve in quality.
8. As Java sugar is undoubtedly better in quality everybody likes it. But in view of the low parity of Indian sugar consumers buy Indian sugar.
9. Indian sugar is gradually improving in quality. It will take the place of Java sugar if it could be little more refined and produced in dry thick quality.
10. We do not know this.
11. At present we cannot say this.
12. Yes, it will serve useful purpose.
13. We are as yet not in a position to say anything about standards.
14. We do not know the basis referred to.
15. No.
16. All sales of Indian sugar should be through one central organisation. A little more improvement in the quality of sugar, control on cane production and facility to export from India will lead to better marketing.
17. We have no estimate.

18. We do not know.
19. We do not know.
20. No statistics are available.
21. No.
22. Indian sugar is not exported to any foreign country.
23. As far as we know the excise duty entailed neither loss nor any profit to dealers or manufacturers. It is a matter concerning the cane growers.
24. We do not know.
25. We are not interested in molasses.

(9) *Letter, dated the 29th June, 1937, from Messrs. P. M. Mohamed Usman & Co., Merchants and Commission Agents, Tellicherry, Madras.*

We enclose herewith our replies to your questionnaire, dated the 28th ultimo, which we trust you will find useful.

ANSWERS TO GENERAL QUESTIONNAIRE—(MARKETING SECTION).

1. The principal buying markets are (1) Mysore, and (2) Cawnpore.
2. Our usual arrangements with manufacturers are payment at sight draft (b) brokers who charge their commission with their sellers usually 4 annas per cent.
3. Yes, it is suitable.
4. (a) the difference between retail and wholesale prices has been from 2 to 4 annas per bag.
5. No fluctuations worth mentioning.
6. Either straw or gunnies are spread on the floor and sugar bags stacked over these. They become a bit sticky after 2/3 months time.
7. Yes, Indian sugar deteriorates earlier than Java. Java sugar may last for 4-5 months whereas the Indian sugar may last 2-3 months.
8. No.
9. There is no difference except in regard to deterioration.
10. (b) once stored may last 2-3 months amounting to 400-500 bags at a time.
- 11 & 12. Yes.
13. Yes. Thicker quality is preferred, in this market. Only 2 grades (thick and thin).
14. No. (B) No standard is known.
15. No.
16. We prefer terminal markets in the sense that sugar is sold from different centres on the same price and terms.
18. In sweetmeat trade sugar only is preferred.
19. Can't suggest.
20. Price of Indian sugar ranged from Rs. 23 to the present price of Rs. 19-4 f.o.r. Tellicherry. Java sugar Rs. 10 c.i.f. Tellicherry. Duty Rs. 18-2, landing charges As. 4 per bag.
21. No.
22. Not to our knowledge.
23. No effect in consumption. But it has affected factory people.

(10) *Letter, dated the 10th June, 1937, from T. M. M. Mathalai Nadar & Co., Madura, Madras.*

We had been asked by the Director of Agriculture, Madras, to furnish you with our opinions to the questionnaire sent to us and in response thereto we are giving below our ideas to questions to which we have knowledge of. Most of the questions have to be replied by the mill owners only.

24. (a) We have no inconveniences if quota is fixed for sugar manufacture by factories.

84. We purchase from the mills about 100 to 500 bags and sell even a single bag in retail to retail dealers at a normal profit of As. 2-4 per bag.

87. The difference between wholesale and retail rates does not fluctuate widely in these parts.

88. We used to purchase then and there and clear sale within a month and we do not stock sugar for a long time. Hence, the sugar does not deteriorate.

90. Java or other imported sugar is not coming to the market for the last one year. No one prefers the imported sugar to Indian sugar.

93. There will be no advantage of marketing survey of sugar industry.

95. It will be better if all Indian sugars are standardized.

98. Terminal markets are not necessary.

108. It appears that the increase of excise duty for sugar has affected the cane-growers only.

(11) *Letter, dated the 17th June, 1937, from B. K. M. Murugakonar & Sons., Merchant, Madura, Madras.*

RE:—QUESTIONNAIRES ISSUED BY TARIFF BOARD.

As we had been asked by the Director of Agriculture to submit our opinions to the above questionnaires, we beg to submit our replies hereunder to those questions to which we have knowledge of:—

24. (a) Yes, we are in favour of fixing quota for sugar manufacture by factories because there won't be so much competition and much mugging in all markets.

(b) Yes, we are in favour of granting licenses to new factories and extensions of existing factories because only in some provinces mills have accumulated and in some provinces new factories can be erected.

84. We purchase from the mills from a minimum of 60 to 500 bags and sell retail even a single bag to our retail dealers.

86. The present contract form should be modified in favour of merchants (buyers). Quality must be guaranteed.

87. In these parts the difference between the wholesale and retail prices don't fluctuate widely.

88. We have no special storage arrangements for stocking sugar. We book for quantity required for a month or two, and clear sale then and there without stocking for a long period.

90. Some Indian sugars are equal in quality with Java sugar, and hence even the Candy manufacturers are not preferring Java sugar.

93 & 94. Sugar marketing survey and central all-India selling organisation will be advantageous to mills.

95. It will be much better if Indian sugars are standardised as it will be easy to regulate the rates.

105. The recent increase of excise duty has affected the cane-growers. If from the fresh season forwards due protections are given to them, they won't be affected.

108. The rate of duty on sugar imported into India is indeed effective to ward off foreign sugars competition in Indian markets.

109. The above protection duty would be sufficient.

(12) *Letter, dated the 23rd June, 1937, from Messrs. Volkart Brothers, Madras.*

INDIAN SUGAR PRODUCTION—DISTRIBUTION AND MARKETING.

At the request of the Director of Agriculture, Madras, we have the honour to submit you our report as follows:—

As sugar merchants and distributors, our considered opinion is that the present most unhealthy situation can only be brought back to a sound one provided—

(1) Sugarcane cultivation and refining of sugar is strictly regulated under a quota system.

(2) Distribution and marketing of refined sugar is strictly regulated.

It is generally agreed that the whole of India cannot consume more than 900,000 tons per year of refined sugar. The outturn of the season 1935-36 was 912,100 tons. The difficulty of marketing was increasingly felt from June, 1936, onwards, emphasizing that anything above 900,000 tons cannot be absorbed.

The output of refined sugar for 1936-37 is estimated at 1,072,500 tons. The present prices in spite of the increase excise duty are substantially lower than last year. This overproduction and consequent pressure on an unwilling market is the direct result of the present low prices.

In the same way as the production, so has the distribution to be strictly regulated. Distribution has to be fixed according to the *bona fide* consumption in the various territories.

The present indiscriminate dumping of Northern India sugars to the South Indian markets has a ruinous effect on sugar factories, distributors and merchants alike.

(13) *Replies to the Marketing Section of the General Questionnaire, dated the 19th June, 1937, forwarded by Haji Abdul Latif Tayub Sait, Bangalore.*

1. Southern India—Mandya.

Northern India—Sidholia, Tankohi, Manjolia, etc.

2. (a) Purchases are made from the manufacturers or agents with a margin of profit of about 2 annas per bag of 2 cwts.

(b) Retail sales of less than a bag are not made. Only bagfuls are sold with a profit of about 2 annas.

3. So far as we are aware we think it is suitable.

5. It does, the fluctuation ranges from six pies to one anna.

6. Sugar is stored in the godowns along with other grains and no special arrangements are made. The deterioration will be about two seers per bag.

7. Java sugar which has a long standing is certainly superior. Indian sugar is of late improving.

8. There will be no question of preferring. If the rate of both the Indian and imported sugar be one and the same the imported sugar is preferred being superior. The quality of Indian sugar is of late improving.

9. Java and other imported sugar is well-polished, white and clean crystals while the Indian is not so clean.

12. Yes, that is preferred.
 18. Sugar is certainly preferred to gur and has a large market.
 22. Not that we know of.

Replies to Questionnaire for Gur Jaggery merchants.

(1) Letter, dated 5th June, 1937, from the Manager, Bhowal Raj C. W. Estate, Jaidebpur, Bengal.

In pursuance of the instructions contained in Circular letter No. 8535-54 of the Director of Agriculture, Bengal, I have the honour to State that the Bhowal C. W. Estate does not deal in gur/jaggery. I, however, give below such informations as are available at the headquarters of this Estate:—

1. The local merchants deal with the marketing centres at (1) Kapasia, (2) Charsindur, (3) Rajabari, (4) Narsindi, (5) Raniganj, (6) Lakhpur, (7) Jaidebpur, (8) Tangi, (9) Pubail, (10) Barmi, (11) Sripur, (12) Kaliganj, (13) Savar.

2. Names of the different kinds of gur, viz., (1) Ain gur, (2) Bombai gur, (3) Nochipur gur, (4) Jalkalas gur, (5) Desi gur.

3. The local merchants obtain gur at the Jaidebpur market only from the chief centres, viz., (1) Kapasia, (2) Charsindur, (3) Rajabari, (4) Narsindi, (5) Savar, (6) Mirkadim.

	Approximately Mds. gur.
(1) Kapasia	750
(2) Charsindur	650
(3) Rajabari	500
(4) Narsindi	450
(5) Savar	350
(6) Mirkadim	300

Cost of conveyance is the cause of variation in quantity.

4. No variation.

	Per Md. Rs. A.	
5. (1) Ain gur	4 0	} The price varies according to the colour and degree of crystallisation of gur.
(2) Bombay gur	3 8	
(3) Nasipur gur	3 8	
(4) Jalkalas gur	3 8	
(5) Desi gur	3 0	

6. The price of sugar is Rs. 7 per maund and gur Rs. 3-8 per maund. The gur which is prepared by local people is more widely consumed by the poorer classes.

7. Sugar never replaces gur.

8. Gur generally remains 3 months in good condition.

The quality of gur generally deteriorates if kept long. But the quality of Ain, Bombai and Nasipur gur lasts longer than Desi gur.

As jaggery is not manufactured or available here, reply is confined only to country gur.

- (2) *Replies to questionnaire for gur/jaggery merchants, dated the 16th June, 1937, furnished by Messrs. Hira Singh, Gulab Singh, Punjab.*

- ### 1. Sargodha and Layalpur.

2. Desi (colony produced).

- (b) Coming from Peshawar district.

- (c) Dheia coming from Saharanpur.

- (d) Chakku (coming from Muzaffarnagar).

- (e) **Pansera (Meerut).**

- (f) Laddu (coming from Meerut).

3. Supply centres are as follows:—

Peshawar District, Saharanpur District, Meerut District. We have no separate ledger showing each separate source of supply.

4. Each year the quality of jaggery is improved because people prefer white yellow jaggery.

[illegible]

The price was on 15th June per each year for Saharanpur quality goods. The prices vary according to good or bad crop of cane; the prices of gur are falling yearly because people prefer sugar to gur being available at cheap rates.

7. There is competition between gur, factory sugar and khandsari sugar. The farmer makes gur or khandsari sugar only if he receives more than he realises as the price from the sale of cane to mill. Sugar is becoming more popular every year.

8. Jaggery can be kept in good condition in winter only. In hot months of June and July, it melts and changes colour from white to red.

- (b) Yes, some qualities melt and change colour and others do not melt.

- (3) *Reply to Questionnaires for Gur/Jaggery merchants by Seth Pahoomal, Larkana, Sind.*

- ### 1. Larkana.

2. Nil.

3. Meerath, Saharanpur, Sukkur, Muzaffarnagar, Shamli and Gojro. Account Books from the year 1933-34 are available with me.

Quantity obtained.

Md. S.

Cost price per Md.

Rs. A. P. Rs. A. P.

1933-34—

Gur—

Meerath	165 5	3 4 0 to 3 8 6
Saharanpur	136 15	3 10 0

Jaggery—

Saharanpur	255 5	3 12 0
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1934-35—

Gur—

Sukkur	11 30	4 11 6
Meerath	388 0	4 1 0 to 5 0 6
Muzaffarnagar	141 30	4 6 6

Jaggery—

Sukkur	29 20	5 3 0
Meerath	10 2	5 6 6
Muzaffarnagar	381 10	5 6 0

1935-36—

Gur—

Meerath	763 5	3 0 0 to 3 4 6
Shamli	69 4	1 5 0 to 3 0 0

Jaggery—

Meerath	142 0	3 5 0 to 4 14 0
Muzaffarnagar	636 0	3 14 0 to 5 8 0
Shamli	180 0	3 3 0

1936-37—

Gur—

Meerath	973 0	2 9 9 to 4 0 0
Saharanpur	164 0	3 0 0

Jaggery—

Muzaffarnagar	983 20	2 15 0 to 3 7 0
Gajro	385 0	3 10 0
Saharanpur	66 0	3 10 0

4. No.

5. The selling prices are as under:—

	Gur per Md.		Jaggery per Md.	
	Rs. A.	Rs. A.	Rs. A.	Rs. A.
1933-34	4	8 to 5 2	5	4 to 6 0
1934-35	6	0 to 6 4	5	14 to 6 6
1935-36	5	5 to 6 8	5	5 to 6 11
1936-37	4	4 to 5 4	4	2 to 5 4

6 & 7. Nil.

8. One year only.

No reply to questionnaires as I do not deal in manufacturing of sugar.

(4) *Replies to Questionnaire furnished by Mr. Seemakurti Subba Rao, Merchant, Rajahmundry, Madras.*

1. I receive stocks from Ramachandrapur and Peddapur taluks and I export the same to West Godavari, Krishna and Guntur districts.

2. Jaggery is moulded into slabs with white and black colours.

3. I obtain jaggery from the sugarcane growing villages of Ramachandrapur and Peddapur taluks:—60 per cent. from Ramachandrapur taluks and 40 per cent. from Peddapur taluk. Quantities: Figures not available.

There is generally a gradual rise in the quantity from the year 1930 onwards. This is mostly due to a fall in the price of paddy in the earlier years. But this year the area planted has gone down considerably due to the very low price of jaggery.

4. There is variation in the quality of jaggery got in recent years. This is due to the use of artificial manures like sulphate of ammonia. Previous to this ryots used to apply castor-cake when the quality of jaggery was very good.

5. Actual figures are not available but the prices are gradually going down for the last seven years. This may be attributed to the stoppage of export to the Wizaris dominions where they themselves are growing sugarcane. Moreover the area under cane has increased locally.

6. There is generally no relation between the price of jaggery and sugar.

7. There is no competition between jaggery and Indian factory sugar. There is no khandsari sugar prepared here. Sugar is not replacing jaggery in the market. Had it not been for the small factories rising here and there, the price of jaggery would have gone down still further.

8. Good jaggery will keep in good condition for year. There is no variation in the keeping qualities of either white or black jaggery. But, jaggery prepared from crops manured with artificials do not keep well.

(5) *Replies furnished by Kaky Prabhakara Rao Bros., Rajahmundry, Madras.*

1. I get my stocks from Ramachandrapur and the Peddapur taluks and supplied for consumption to other taluks in the district.

2. There are two kinds; white and black.

3. I obtain my supplies from Ramachandrapur and Peddapur taluks. Quantities: Figures not available. But there is a rise in the quantity received. This is due to the increase in area under cane due to the fall of price of paddy.

4. The quality of jaggery has gone down. This is due to the application of *Ammonia*.

5. Prices are not available. There is a general fall in the prices. This is due to the increased area under cane. The export of the same to Nizams is stopped.

6. There is no relation.

7. There is no competition. Sugar is not replacing jaggery.
 8. For one year. There is variation in keeping quality of jaggery prepared from crops manured with castor cake and company manures.

(6) *Letter, dated the 22nd June, 1937, from M. R. Ry Addepalli Seshiah, Bezwada, Madras.*

Reference:—C. 196/37, DATED 3RD JUNE, 1937, OF DIRECTOR OF AGRICULTURE, MADRAS.

Subject:—ANSWERS TO TARIFF BOARD QUESTIONNAIRE.

I herewith advise the despatch of my answers to the questions I received from the Director of Agriculture, Madras, with reference to Sugar Tariff Board Enquiry with six spare copies.

Enclosure.

1. There is no principal marketing centre in which we deal. The consignment is disposed of in Kistna district itself at the following places—

- (1) Nandigama,
- (2) Masulipatam,
- (3) Gudivada, and
- (4) Madura (Nizam Dominions).

2. There is only one kind, namely, cane jaggery, of which there are three qualities judged according to the colour.

3. I obtain my supply from Ramachandrapuram, Peddapuram and Anakapalli taluks.

	Ramachandra- puram.	Anakapalli.	Peddapuram.
1932-33 . . .	17,148	11,529	13,868
1933-34 . . .	20,294	7,681	33,608
1934-35 . . .	8,429	7,530	24,840
1935-36 . . .	23,530	8,853	45,687

Only the figures for the above years are available.

4. There has been no variation as regards the quality of jaggery in recent years.

		Per Md.	
		Rs. A. P.	Rs. A. P.
5.	1932-33—		
	Nov.	7	3 0
	March-April	4	3 0
	1933-34	3	12 9 to 7 8 0
	1934-35	5	8 0
	1935-36	4	10 0
	1936-37	3	6 0

The cause for the fall of price is due to the increased production of sugarcane.

6. The price of sugar controls the price of jaggery.

7. There is no competition. Sugar is not replacing jaggery.

8. Generally jaggery keeps in good condition for a year. Ramachandrapuram jaggery lasts longer followed by Peddapuram and Anakapalli.

(7) *Replies to Questionnaire for jaggery merchants by Mr. S. N. Chellappa Iyer, Coimbatore, Madras Presidency.*

1. The chief markets in which I deal are:—

- | | | |
|-------------------------------------------------------------------------|---|------------------|
| (i) Malabar and South Kanara | } | Cubes or Prisms. |
| (ii) The Nilgiris | | |
| (iii) Nizam's State | | |
| (iv) Distilleries in Renigunta,
Bangalore, Madras and
Coimbatore. | } | Debs or lumps. |
| | | |

2. I deal in both (i) Cubes or Prisms and (ii) Debs or lumps. By far a large part of my dealings are in debs.

3. My supplies are delivered chiefly from Annur area in the first season and Singanallur area in the second season. The total quantities dealt with in the different years are as under:—

Year.	Mds.
1930	12,000
1931	10,000
1932	8,000
1933	5,000
1934-1937	Nil.

(b) The fall in the business in the earlier years and its total stoppage in the final years is due in a large measure to want of demand in the marketing centres.

4. There has been a very slight fall in the standard of quality in recent years. This is due to the crop being attended to in a perfunctory manner; this in turn has been brought about the low return from the crop. The low returns have come about as a result of diseases in cane and low prices for jaggery.

5. Prices—

	Per Md. on an average.
	Rs. A.
1930-33	4 8
1934-37	3 4

(both for debs).

6. Prices of jaggery do not depend on the price of sugar or *vice versa*.

7. There is no such competition.

8. Different kinds have different periods of keeping quality. Debs keep well for three months while cubes (prisms) keep on for six months.

(8) *Letter, dated the 15th June, 1937, from K. Ahmed Kutty Hajee, Kunhi Moossa Hajee & Co., Coimbatore.*

With reference to your letter No. 173, dated the 12th May, 1937, sending me a questionnaire for gur/jaggery merchants, we enclose herewith six copies of answers prepared by us.

Enclosure.

QUESTIONNAIRE FOR GUR/JAGGERY MERCHANTS.

1. The principal markets in which we deal are Malabar (Calicut, Tellicherry, Tirur, Palghat, etc.), South Kanara (Mangalore) and occasionally Nilgiris.

2. We deal only in cubes. These are divided into different grades according to colour, hardness and purity.

3. We get our supplies from villages around Coimbatore town within a radius of 25 miles. Our supplies in the last seven years are as under:—

	Average quantity per year in maunds.	
	First Season.	Second Season.
1930-33	20,000	40,000
1934 & 1935	20,000	20,000
1936	4,000	4,000
1937	2,000	Just commenced.

The main cause for the fall in the quantity is that we have no market in the centres of our export. Mangalore, our chief market is now getting jaggery from the ghat area of South Kanara, Mysore, Tinnevely, Travancore, etc., where we are told, the cultivation of sugarcane has become extended.

4. We do not observe any difference in the quality of jaggery in recent years as against that obtaining in the past. In a general way the quality is poor in years of adverse seasonal conditions.

5. Prices—

Year.	Price per Md.	
	From Rs. A.	To Rs. A.
1931	3 4	8 4
1932	3 4	8 12
1933	3 10	6 8
1934 & 1935	3 4	5 12
1936	2 8	5 4
1937	3 8	6 0

6. Price of jaggery is not influenced by the price of sugar.

7. There is no competition between gur and Indian factory sugar in the matter of prices. Khandsari sugar is not produced locally. But as sugar is becoming cheaper and cheaper the jaggery consumption is becoming less and less. In this sense sugar is gradually replacing jaggery.

8. The keeping quality of jaggery will depend on the way in which the jaggery is made. Good jaggery taken at a higher temperature will keep well for one year. If taken at a lower temperature the keeping quality becomes affected. We deal only in hard jaggery and we seldom stock it for more than six months. The loss in weight by six months storage will be $2\frac{1}{2}$ to 3 per cent.

(9) *Answers to the Questionnaire to the Jaggery Merchants by Messrs. C. T. Venkatappaya, Commission Agent, Gudivada, Madras.*

1. The following are the principal jaggery centres with which we deal—

- (1) Anakapalli,
- (2) Peddapuram,
- (3) Rajahmundry,
- (4) Elloro,
- (5) Biccavole,
- (6) Local.

2. Only one kind of jaggery is marketed but there is difference in the shape of the moulds—

- (a) Basket shape,
- (b) Slabs.

3. The chief centres from which jaggery is imported are noted in Answer No. 1. The quantities imported for the last seven years are given below :—

—	1930-31	1931-32	1932-33	1933-34	1934-35	1935-36	1936-37
(i) Anakapalli .	1,870	1,850	1,579	1,850	1,579	1,354	903
(ii) Peddapuram .	2,194	2,194	2,042	1,891	1,891	1,513	1,437
(iii) Rajahmundry .	605	605	529	681	756	378	454
(iv) Ellore . .	2,420	2,269	1,891	1,513	756	605	719
(v) Local . .	605	756	756	983	1,135	1,513	1,135

N. B.—The above figures are in standard maunds.

4. There is not much of variation as this is only for local consumption which is almost steady.

5. The price is almost steady ranging between Rs. 12-8 to Rs. 15 per maund.

6. There is no relation between the prices of sugar and jaggery.

7. There is no competition between jaggery and sugar. The sugar is not replacing the jaggery.

8. The jaggery keeps on for 6 to 8 months except that from Anakapalli and local which will keep only for 3 months.

(10) *Letter, dated the 17th June, 1937, from Messrs. Nandipati Punnaiah and Company, General Merchants, Tenali, Madras, to the Director of Agriculture, Madras.*

In pursuance of your post cards dated 2nd June and 3rd June, we are submitting the required answers for your questions as far as we know.

1. Generally we get large amount of jaggery from Mamillapalli, Nandivelugu, Angalakudumu, Jagarlamudi and Gudivada of Tenali Taluk and sell locally.

2. There are no different kinds in gur/jaggery but we get only one kind with slight difference in colour and the quality.

3. The chief supplying centres are those places which we have mentioned in Question No. 1. Generally on the whole, the above places can contribute 10 thousand candies (20 maunds make one candy). The variation is due to difference of soil.

4. No.

5. Generally one candy of best quality costs from Rs. 20 to Rs. 30 (but there may be higgling of prices due to competition).

6. Absolutely nothing.

7. We are quite foreign to this question because we have no knowledge of any sugar factory here in this centre. But, we sell both gur/jaggery and sugar of Pary company, Mothehar Veyyur but sugar cannot be replaced in place of gur/jaggery absolutely.

8. In the summer season it will be all right, immaterial of variations, but when the winter begins, some leaking nature begins and make the solid sugarcane into watery. To prevent from this we use "Baddies" i.e., we will be applying fire from the down stairs so that the commodity may not be spoiled.

In reply to the question 3 we say that we are dealing in this gur/jaggery business from the last four years and hence we could not give the statistics of gur/jaggery for the last seven years. But from the last four years the business in gur/jaggery is improving.

(11) *Answers to the Questionnaire issued by the Tariff Board furnished by M. R. Ry. Devata Chenchu Subbaiah Setti Garu, District Board Member and Merchant, Nayudupet, Madras.*

1. We import jaggery and dispose it of locally.
2. The different kinds of jaggery marketed by me are (1) Balls, (2) Powder.
3. The chief centres from which I obtain my supply of jaggery are (1) Pakala, (2) Chendragiri, (3) Gudiyattam. Quantities obtained to this place, i.e., Nayudupet on an average per year for the last seven years from—

	Imp. maunds.
(1) Pakala	1,800
(2) Chendragiri	1,800
(3) Gudiyattam	720

4. There is no variation in the quality of jaggery obtained.
5. The price of Ball jaggery is Rs. 2-14 per Imp. maund.
The price of Powder Jaggery is Rs. 2-10 per Imp. maund.
For the last 7 years the fluctuation in prices is ranging between Rs. 2-14 to Rs. 4 per. Imp. maund due to demand and supply.
6. More often than not prices of jaggery seem to be raising or falling along with the prices of sugar.
7. There is no competition between jaggery and sugar. Sugar is not replacing jaggery in this market.
8. Jaggery will keep in good condition throughout summer but not so in winter. Therefore, quick disposal is resorted to before winter. The Ball Jaggery keeps longer than the Powder sort.

(12) *Replies to Questionnaire for Gur/Jaggery Merchants, furnished by Messrs. P. M. Mohamed Usman & Co., Merchants and Commission Agents, Tellicherry, Madras.*

1. Trichinopoly (Kudumudi) and Coimbatore.
2. Small and big size anies.
3. Four to five hundred bags a year.
4. Yes, they have recently supplied white quality.
5. Rs. 40 to 50 per candy of 660 lbs.
6. Always remains same.
7. No competition, to our knowledge.
8. One to one and half months. Black may stand a better test.

(13) *Letter, dated the 20th June, 1937, from M. R. Ry. Naralla Venkata Krishnaiahgaru, Jaggery Merchant and Commission Agent, Guntur, Madras Presidency.*

I have the honour to inform you that I have sent herewith the answers to the eight questions issued by the Tariff Board, as desired by the Director of Agriculture, Madras. Six spare copies are herein enclosed.

I. In and round about Guntur.

II. Cane jaggery only.

III. The following are the chief centres wherefrom jaggery is imported, and the quantity obtained during the last seven years from each of the centres is shown in terms of standard maund of 82½ lbs. against each (approximate figures):—

	1930.	1931.	1932.	1933.	1934.	1935.	1936.
1. Anakapali Taluq, Vizagapatam District.	179	Nil.	416	373	Nil.	608	531
2. Ramchandrapuram Taluq, East Godavari District.	6,491	8,691	6,847	9,251	3,984	4,432	4,079
3. Peddapuram Taluq, East Godavari District.	3,087	1,571	3,311	4,303	4,692	3,077	602
4. Tirupur Taluq, Coimbatore District.	Nil.	40	Nil.	Nil.	Nil.	Nil.	Nil.
5. Gannavaram Taluq, Kistna District.	Nil.	Nil.	Nil.	Nil.	Nil.	Nil.	61
6. Tenali Taluq, Guntur District .	409	1,105	1,532	919	3,570	4,863	3,537
7. Tumkur, Mysore State . . .	Nil.	212	Nil.	Nil.	Nil.	Nil.	Nil.

The causes for the variations in the jaggery imports are, variations in prices and also local demands in those particular periods.

IV. Yes. Some variations in the quality of jaggery were noticed during some years. This is perhaps due to variations in soil fertility, climatic conditions and defects in the manufacture of jaggery.

V. The approximate prices of jaggery for the last seven years are given below:—

		Price per standard maund of 82½ lbs.					
		From			To		
		Rs.	A.	P.	Rs.	A.	P.
1930	. . . . .	9	7	6	6	15	4
1931	. . . . .	4	8	5	5	12	2
1932	. . . . .	5	12	2	5	5	7
1933	. . . . .	5	5	7	3	14	8
1934	. . . . .	3	11	3	5	5	7
1935	. . . . .	5	2	3	4	8	5
1936	. . . . .	4	5	1	4	8	5

I cannot attribute any definite reasons to the variations in the prices of jaggery. It may be perhaps due to overproduction in some years and under production in other years.

VI. No.

VII. There is absolutely no competition between jaggery and sugar. Yes. Sugar is gradually replacing jaggery.

VIII. The keeping quality of jaggery depends upon climatic conditions. In rainy seasons jaggery does not keep more than one or one and half months. In dry seasons it can keep up to six months without any deterioration.

(14) *Letter, dated the 21st June, 1937, from Mr. G. V. Subbiah, Commission Merchant, Nellore, Madras.*

In obedience to the Director of Agriculture's letter No. 196/37, I beg to furnish the following answers to the questionnaire--

1. The marketing centres in which we deal are the following:

Chandragiri, Vaniambadi, Pakala, Anakapalli and Zangalgangi.

The jaggery we get from the above centres is distributed to the important places in this district.

2. There is only one kind of jaggery marketed by us. It is generally called by the name of the centre from which we get a variety called "Mudda Bellam" in Telugu. The jaggery we get from all centres will be of golden colour.

3. The chief centre from which we get jaggery are Chandragiri, Pakala, Vaniambadi and Zangalgangi and in cases of insufficient supply from the centres given above, we call for the supply from Anakapalli. The average quantity of jaggery obtained for the past seven years is from 1,500 bags to 2,000 bags.

Variation in the quantity imported, if any, might be due to the inability of the supplier from the above centres. We, as commission merchants, can not attribute any reason for variation in the supply.

4. We find no variation in the quality of jaggery.

5. The cost of jaggery marketed by us was Rs. 2 per maund (of 25 lbs.) for four years, i.e., from 1931-35 and Re. 1 per maund for the past three years, i.e., 1935-37.

The variation might be due to increasing output and less consumption of jaggery.

6. There is no relationship between the prices of jaggery and sugar.

7. (i) There is no competition between jaggery and Indian factory sugar.

(ii) No competition between jaggery and khandsari sugar.

8. The jaggery marketed by us will keep in good condition for one to four months.

The jaggery marketed by us from Chandragiri and Pakala will keep in good condition for four months and then turns saltish.

The jaggery from other centres will only keep in good condition for a month or a fortnight more. Then afterwards it turns black and tastes saltish.

(15) *Answers to the Questionnaire for Jaggery Merchants, furnished by M. R. Ry. Thadikonda Buchi Venkata Nanchariah Garu, Commission Merchant, Muslipatam, Madras.*

1. I am a commission merchant: I purchase completely the total requirements of jaggery from different centres locally and in the adjoining districts and sell it to Masulipatam market and to the surrounding subsidiary centres.

2. There is only one kind of jaggery in these parts made out of boiling sugarcane juice in the usual way.

8. The centres of supply of jaggery are in this district and the adjoining districts—Kistna, East Godavari, West Godavari and Vizacpatam districts. The main supply is from East and West Godavari districts and very little from others. There is not much variation in the supplies. The total for all centres per year being 30,000 maunds of jaggery.

4. There has been a deterioration in the quality of jaggery in recent years attributable to the changes in the practices of (Nitrogen) manuring; the application of castor cake in previous years, which gave a good quality product with better keeping qualities, is now replaced by the application of ammonium sulphate.

5. The following are the wholesale prices per maund of jaggery for last 7 years (1st grade):—

Years.	Varied	
	From	To
	Rs. A.	Rs. A.
1931-32	5 9	7 4
1932-33	5 4	8 0
1933-34	3 14	4 13
1934-35	4 7	5 9
1935-36	4 10	5 8
1936-37	3 14	5 6
From April 1937 up to now	3 14	4 1

6. There is no relation between the prices of jaggery and sugar.

7. No competition. Sugar is not replacing jaggery in these parts.

8. The first grade jaggery can be kept here in good condition for two months and the other grades for less periods in order; the worst and fourth grade keeps only for a month.

(16) *Replies received from Guduthur Sanna Narasappa Chetty, Commission Merchant, Bellary, Madras.*

1. The principal gur/jaggery marketing centres in which I deal are in the areas of Kampli and Hospet and the villages in between these two towns, viz., Muddapura, Ramasagar, Bukkasagara, Kamalapura, Malapana-gudi, Kondinayakanahalli and Ananthasayanagudi. All these places are in my district of Bellary. Occasionally I get jaggery from Tumkur in Mysore State and Udumalpet in Coimbatore district.

2. Local jaggery, that is, Hospet and Kampli jaggery is manufactured in the form of slabs prepared out of cane juice and filled in palmyrrah mat bags. Tumkur jaggery comes in big Acchu (print) form with approximate measurements of 24" each side in length, breadth and height. Jaggery from Coimbatore district comes in small Acchu form having roughly 1½" in height and 1" in length and breadth.

3. I obtain my supply of jaggery from Kampli and Hospet and the villages mentioned in my answer to the first question.

The quantity of jaggery I have obtained from all these centres are as follows:—

Telugu Year.	Bags.
1930-31, Pramoduta	6,726
1931-32, Prajotpathi	8,936
1932-33, Angerasa	9,026
1933-34, Sreemukha	8,351
1934-35, Bhava	9,879
1935-36, Yura	7,118
1936-37, Dhatu	8,607

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Each bag weighs roughly 2 Imperial maunds. I have got two kinds of persons who send me jaggery for sale. First of these are the ryots who grow cane, crush them, prepare jaggery and send it direct to me for sale. They grow cane every alternative year. Hence there will be variations in their supply every year. Secondly there are businessmen who purchase jaggery at the manufacturing centres and send them to my shop for sale. Sometimes the rates suit them and at other times not. Consequently there will be variation in the supply according to circumstances. We sell jaggery to retail dealers in and around Bellary who in their turn sell it to villagers such as ryots of black cotton soil. If the growth of cotton and grains is good they consume much of jaggery for their daily life and marriage and such other celebrations which is but natural when the ryot is well placed with regard to the produce of his land and decent prices of the same. So when the demand for jaggery is great the supply also varies. These, in my opinion, are the causes for variations in the supply of jaggery.

4. Yes. There has been variation in the quality of jaggery in recent years.

Formerly manure (cowdung, etc.) was freely used to fit the land for the growth of sugarcane. The quality of sugarcane was good, its juice was good and so the quality of jaggery was very good. Whereas in recent years salts such as ammonium sulphate are replacing manure. The advantage of this is an increase in the quality of the growth of sugarcane and jaggery. The worry and trouble of accumulating manure some months in advance is reduced because ammonium sulphate can be had at the required time in any shop. But unfortunately the quality of cane, juice, and jaggery is inferior.

The prices of slab jaggery, that is, local jaggery for the last seven or eight years are as follows:—

Year.	Superior Jaggery.			Inferior Jaggery.		
		Rs.	A. P.		Rs.	A. P.
1930	.	7	15 0	.	6	11 9
1931	.	5	2 6	.	3	15 6
1932	.	5	9 0	.	3	9 0
1933	.	3	15 6	.	2	15 9
1934	.	3	9 0	.	2	6 0
1935	.	5	13 9	.	4	6 0
1936	.	4	9 0	.	2	15 9
1937	.	3	2 9	.	1	15 9

All prices are per Imperial maund of 82½ lbs. (equivalent to 3,200 tolas). The month of March in each year has been selected for quoting the prices as it is considered to be a busy month in the jaggery season.

The main cause for the variation in the prices of jaggery, in my opinion, is the relation between the supply and demand. When the supply is great and the demand is less the result is a decline in the price. When the demand exceeds the supply there will be a rise in the price. With regard to the supply and demand of jaggery I have already dealt at some length in my answer 3. An additional cause for the excess of supply and less of demand in the last year is the opening of the sugar factory at Hospet. The factory purchases large quantities of cane from many ryots in and around Hospet. Attracted by this and expecting that a decent price for cane would be fixed by the factory authorities, many have grown cane instead of paddy for the last two years deviating from a longstanding practice of growing jaggery and paddy in alternative years. But they are disappointed in the end. The sugar factory has fixed a low price of Rs. 8-8 per ton of cane *ex-factory* delivery. About 11 local maunds or say

nearly 3½ standard maunds of jaggery can be prepared out of one ton of cane. After deducting the cutting charges of cane and the cartage of taking cane to the factory the ryot gets a low amount of money to meet all his demands, viz., land tax, clearing heavy debts and interest, maintenance and the expenses for the growth of cane not to speak of his physical labour. Such is the miserable condition. Still many persons sold cane to the factory fearing that jaggery might not be sold when it is sent to the market in view of the abnormal supply of jaggery after sufficiently meeting the demands of the factory. Further consequent upon the conversion of dry lands into wet lands fit for cane cultivation on account of the Nizamsagar project near Nizambad in the dominions of His Exalted Highness The Nizam of Hyderabad a large quantity of cane is being grown and jaggery supplied to many places in the State. These places were purchasing jaggery from Kampli and Hospet before. Hence there is a large fall in the export of jaggery from Kampli and Hospet. The price of jaggery at Bellary varies with those at Hospet and Kampli. The result is a fall in the price of jaggery and an increase in the sufferings of the ryot—the backbone of the country.

6. To some extent there is relation between the price of jaggery and sugar. If the sugar factory purchases cane at a high price or, say, reasonable price for the manufacture of sugar the price of jaggery also will proportionately rise for the producer of jaggery may not be willing to sell his jaggery at a less price on account of his confidence in the factory price for cane.


7. Sugar is not replacing jaggery in this market, so I don't think there is much of competition between jaggery and sugar.

8. Best local jaggery will keep in good condition for two years. Inferior jaggery cannot be kept in good condition for such a long time. Inferior jaggery will not be as hard or strong as the best one. It becomes weak gradually, gets compressed, becomes a lump and flows out sometimes. It gets spoiled. Care also should be taken to stock and preserve jaggery in a suitable place and manner. Thus there is variation in the jaggery remaining in good condition according to the quality of jaggery and the way in which it is kept.

(17) *Letter, dated the 10th June, 1937, from Messrs. P. Mathuraiveerasamy Nadar & Co., Madura, Madras.*

We have the honour to inform you that we have got one copy of general questionnaire and one copy of questionnaire for gur/jaggery merchants from the office of the Director of Agriculture, Madras, instructing us to forward answers to you, and we having dealings in jaggery only are furnishing you answers to questions for jaggery merchants below.

1. The principal areas where we effect sales of jaggery are Madura, Ramnad and Tinnevely districts except in Nilacottah and Periyakulam taluks where sugarcane cultivation is carried on and there too some sale is effected when they are out of season.

2. The only form of jaggery in our transaction is pyramid like with its base one sq. inch as  this form.

3. The chiefs centres from which we obtain our supply are Periyakulam and Nilacottah taluks in Madura and Udumalpet and Karur and their surrounding places. The following is the approximate number of bags got in the last seven years:—

	Bags.
(i) Karur and Udumalpet	14,000
(ii) Periyakulam taluk	21,000
(iii) Nilacottah taluk	35,000

The variation of quantity from each centre is due to the distance from us. Supply decreases with distance as cost of transit increases the price of jaggery.

4. There has been no variation in the quality of jaggery in the period of our acquaintance with this commodity. But three years ago sugarcane was damaged by a kind of insects and the very decreased amount of jaggery got was turned black in colour but now there is no such damage by insects and they have revived their original colour and quality and quantity of supply.

5. The price of jaggery has been always constant except in that year when sugarcane was damaged by insects when the price of jaggery was Rs. 2-8 and second quality Rs. 2 per maund of 1,027½ rupees weight. The present rate for jaggery is Rs. 1-12 and second quality Rs. 1-8 per maund.

6. The price of sugar is eight annas higher than jaggery as it is now.

7. We have not faced any competition till now with Indian factory sugar and khandsari sugar. Sugar is not replacing jaggery in our market.

8. Jaggery keeps in good condition for six months in the hot season and three months in the rainy season but after the expiry of these periods they begin to change in colour and with the approach of rainy season their body becomes loosened due to the cool moisture air affecting them and hence a change in their shape also results.

(18) *Answers to Questionnaire for Jaggery Merchants, dated the 14th June, 1937, sent by Mr. T. K. Chathukutty Nair, General Merchant and Commission Agent, Big Bazar, Calicut, Madras Presidency.*

1. Calicut and suburbs as Elathur, Kakkodi, Chevayur, Feroke, etc.

2. Cubes and balls of jaggery.

3. Cubes from Coimbatore, Udumalpet and Dharapuram. Balls from Dharmapuri.

Cubes 11,500 to 2,000 maunds in a year (1 md.=82½ lbs.)

Balls 400 to 500—not much of variation in these 7 years.

4. Superior and inferior jaggery in all the years.

5. Prices per maund of 82½ lbs.—

Cubes—

	Rs. A.	Rs. A.
June 1933	5 14	to 7 1
„ 1934	5 9	„ 5 14
„ 1935	5 9	„ 5 14
„ 1936	4 11	„ 5 5
„ 1937	5 5	„ 5 14

Balls—The price is Rs. 5 less (per 700 lbs.) than that of the Cubes, i.e., 9 annas less per maund.

6 & 7. No.

8. 3 to 4 months.

(19) *Replies to Questionnaire furnished by Thatal Subbaramayya, Esq., Madras.*

1. I get my supplies from Ramachandrapur and Peddapur taluks of this district and very rarely from Anakapalle of the Vizagapatam district. This is being utilized for consumption in this district, mostly and rarely there is export to Guntur district.

2. There are mainly white and black varieties.
3. The chief places are the villages of Ramachandrapur and Peddapur taluks.

Quantities—Figure not available, but the quantities received are on the increase year after year. As the price of paddy has gone down, the area under sugarcane has increased.

4. There is a lot of variation in the quality of jaggery received in recent years due to the application of ammonia in place of castor cake.

5. *Prices*—Figures not available, but there is a general fall year after year. This is due to the increased production of jaggery and restriction of export to Nizam and other places.

6. There is no relation between the prices of jaggery and sugar.

7. There is no competition between jaggery and sugar.

8. Good jaggery will keep in good condition for one year. There are variations in the keeping qualities of different kinds of jaggery.

(20) *Reply to the Questionnaires by Kotah Sulhiah Setty, Bangalore.*

1. Bangalore city mostly.
2. Balls and cubes of different sizes.

3. Bangalore city, Taluks in Bangalore Kolar districts, Udevalpet in Coimbatore, Perumapallyam, Shankriddoorg, Kadur and Tiptur. Statistics for 7 years are not available. The available information for the past 3 years is specified, viz., about 1,500 to 2,000 Bengal maunds of supply have been received.

Causes for variations are as follows:—There has been a downfall in the supplies year after year. This is chiefly due to extension of sugarcane cultivation throughout India every year, in places where this was not being grown and establishment of new centres in order to find markets for this stuff at less cost of expenses for the cultivator. The establishment of sugar factories has freely given golden chances for the cultivator, who desires to grow sugarcane vastly.

Besides, the enhancement of freight by railway authorities and the facilities given by road lorries for the fraud distribution with less expenses for places where there are no railway connections.

4. Yes. Because the quality is being improved by using chemicals for clarification purposes.

5. About 7 years back the average price was Rs. 10 per Bengal maund. Now it has come down to Rs. 3 due to overproduction.

6. Yes.

7. There is competition.

(i) If Indian factory sugar is sold at Rs. 7-8 per Bengal maund gur/jaggery is sold at Rs. 3.

(ii) If khandsari sugar is sold at Rs. 6-6 per Bengal maund gur/jaggery is sold at Rs. 3.

Yes.

General representation and replies to Questionnaire received.

1. (a) *Letter, dated the 30th April, 1937, from M. P. Gandhi, Esq., 14-B, Heysham Road, Calcutta.*

With reference to the conversation I had with you at the interview with the Tariff Board on the 19th April, 1937, I am sending to you a short memorandum on the Indian Sugar Industry and its present problems. As explained at the interview, I do not intend to deal here with the various problems exhaustively, leaving it for a later date when your

detailed questionnaire is published. The following memorandum will, I hope, invite your attention to the various problems confronting the industry at the present time:—

The progress of the sugar industry in India, the land of its birth,* since the grant of protection to it in April, 1932, has been magnificent. The number of sugar mills have increased from 57 in 1932-33 to over 137 in 1935-36 and it is expected that the number of mills working in 1936-37 will be about 150. During the year 1935-36, the total production of cane-sugar has been almost equal to the present estimated annual consumption of sugar in the country, and the establishment of new mills has received a considerable check since 1936. The following table will illustrate the development of the industry, the statistics of the cane-factory production and of the total production (which includes sugar refined from gur, and sugar made by the *Khandsari* process in small centrifugals), of sugar in India, since 1931-32—

Sugar Production Statistics—

Year.	No. of Mills working.	Cane Factory production.	Sugar refined from Gur.	Khand-sari. (Con-jectural estima-tes.)	Total pro-duction of sugar in India.	Import of Sugar.
		Tons.	Tons.	Tons.	Tons.	Tons.
1931-32	32	158,581	89,539	250,000	478,119	511,319
1932-33	57	290,177	80,106	275,000	645,383	365,707
1933-34	112	453,965	61,094	200,000	715,059	249,776
1934-35	130	578,115	39,103	150,000	757,218	220,328
1935-36	137	912,000	54,600	125,000	1,091,600	198,888
†1936-37	150	975,000	50,000	125,000	1,150,000	23,000

The industry now having reached a stage where it is practically independent of foreign supplies of sugar, it is essential that it should concentrate its energy on its consolidation and stabilisation in order that it would be able to make itself independent at an early date of State assistance in any form and to bring itself to a pitch of efficiency whereby it would also be in a position to export sugar to outside markets, if and when conditions become propitious therefor.

The year 1936 may well be reckoned as the beginning of the period which practically marks the conclusion of the programme of expansion of this industry in India, and the necessity of its consolidation on a stable basis. The phenomenal development of this industry which has fully vindicated the policy of protection adopted by the State, and which has afforded

* *Vide*, Mr. M. P. Gandhi's "The Indian Sugar Industry—Its past, Present and Future", pp. 382.

† My own estimates.

a measure of satisfaction to every one interested in the welfare of this country, will have justified itself completely only when it is able to increase its efficiency, to bring down its cost of production to a figure more in conformity with the costs in other advanced sugar-producing countries, to consolidate its position and to put itself on such a strong and stable basis that it can stand competition from other countries with the aid of a minimum tariff, and within a short period. Generally, it could be said that most of the existing mills possess modern plants and are making constant endeavours to increase their efficiency and to lower the cost of production by increasing their capacity and thus reducing their overhead charges. *The ultimate success of the industry, however, hinges upon the availability of suitable quality of cane at considerably lower prices than at present, which can only be achieved by comprehensive research in the production of sound, healthy and disease-free canes with plenty of sucrose content, and the extension of the cane-crushing season from about 4 months as at present to at least 8 months during the year, by enabling the cultivators to grow early ripening and late ripening varieties of cane suited to the climatic conditions of the various areas of production.*

It is a matter of satisfaction to find that the total area under cane, as also the area under the improved varieties of cane has been growing consistently since the last few years. The following table will show the total area under cane, the area under improved varieties, the calculated production of sugarcane, and the yield of raw sugar (gur), since 1931-32 to 1936-37. It will be of interest to note that 51·3 per cent. of the area under sugarcane in 1936-37 was in the United Provinces, 14·4 per cent. in the Punjab, and 9·9 per cent. in Bihar. The number of mills in the United Provinces was 67 and in Bihar 35, in 1935-36, out of a total of 137 mills working in the whole of India.

Cane Production Statistics—

Year.	Total acreage under Sugar-cane.	Acreage under improved varieties.	Calculated production of Sugarcane (10+11 factors).	Average cane production per acre.	Yield of Raw Sugar* (Gur).
			Tons.	Tons.	Tons.
1931-32	3,076,000	1,170,478	43,316,000	14·1	4,116,000
1932-33	3,435,000	1,845,788	51,129,000	14·9	4,859,000
1933-34	3,433,000	2,295,257	52,455,000	15·3	5,055,000
1934-35	3,596,000	2,445,719	54,346,000	15·1	5,268,000
1935-36	4,020,000	2,700,000	61,102,000	15·2	5,908,000
1936-37	4,431,000	2,800,000	70,170,000	16·5	6,717,000
(Second forecast)		(My estimate)			

A glance at the table will show that the area under improved varieties in the year 1935-36 came to about 67 per cent. of the total area as compared with 36 per cent. in 1931-32. The production of cane per acre

* It is noteworthy that at present, India is the largest sugar-producing country in the world. Till 1931, Cuba was leading.

is also increasing, albeit very slowly, due to the increasing vogue of growing improved varieties of sugarcane.

It is not generally known that in spite of such a rapid development of the industry and the establishment of such a large number of mills, the quantity and percentage of cane used for crushing in modern factories is yet remarkably small. A very large percentage and quantity of cane is yet used for manufacture of gur, the production of which is about 4 times that of sugar, and due to such a large quantity of gur being made for direct consumption by the people in this country, India ranks as the largest sugar-producing country in the world, at the present time. The following table will show the estimated quantity and percentage of cane used under different heads in India from 1931-32 to 1936-37:—

Uses of Cane: Percentage of Cane used in Factories, etc.—

Year.	Percentage of cane crushed in factories.	Quantity crushed in factories.	Quantity crushed in Gur manufacture.	Quantity crushed in Khandsari manufacture.	Quantity used for chewing, planting sets, etc.
		Tons.	Tons.	Tons.	Tons.
1931-32 . .	4.1	1,783,000	30,873,000	5,300,000	5,400,000
1932-33 . .	6.5	3,350,000	36,779,000	5,500,000	5,500,000
1933-34 . .	9.8	5,157,000	33,397,630	4,000,000	6,900,000
1934-35 . .	12.3	6,672,000	37,774,000	3,000,000	6,900,000
1935-36 . .	16.0	9,801,000	43,200,000	2,500,000	7,000,000
1936-37 . .	16.1	10,500,000	43,200,000 (My estimate).	2,500,000	13,000,000

The present annual consumption of sugar in India has been roughly estimated to be between 900,000 and 100,000 tons per year (our *per capita* consumption is very small as compared with most of the other countries of the world). This consumption is not steady, and varies from year to year with the rise and fall in the price of sugar, and the change in the economic conditions in the country. But we would not be far out if we estimated the present annual consumption of sugar to be about 10½ lakhs of tons. It has been shown that the total production of sugar in India in 1935-36 was over 10½ lakhs of tons, and the production in 1936-37, I believe, will exceed 11 lakhs of tons.

It would be manifest from the above, that there is hardly any necessity now of import of sugar from foreign countries except of special qualities to meet the needs of fastidious people. The import of sugar in India has gone down rapidly during the last few years, as can be seen from the table on page 584*.

* In 1935, there were alarming imports of sugar through the various Indian States in Kathiawar, presumably aided by the States by a rebate in the import duty, etc. This created a very serious situation as this sugar was later imported into British India, and sold at prices considerably lower than the price per ton in British India. These imports of sugar at once constituted a serious menace to the indigenous industry and a loss of revenue to the Government of India. It is gratifying to note, however, that the Government of India have recently * * * * *

The Government's estimate of import of sugar for the year 1936-37 was 110,000 tons only, but even this did not materialise. The import of sugar during the eleven months ended February, 1937, has been 22,374 tons only. The Government's yield of revenue from the levy of the import duty on sugar has also dwindled from Rs. 6,84,00,000 in 1932-33 to Rs. 3,23,77,000 in 1935-36, and although the budget estimate of such yield for the year 1936-37 is Rs. 2,00,00,000, the Government have been able to realise only Rs. 50,51,184 from import duty during 1936-37. In 1934-35, the Government of India imposed an excise duty of Rs. 1-5 per cwt. on factory sugar, and 10 As. on *Khandsari* sugar, and the yield of revenue therefrom during 1934-35 was Rs. 97,22,000, in 1935-36, Rs. 1,58,82,000, while the budget estimate of revenue from the Excise Duty for the year 1936-37 is Rs. 1,96,00,000. It is probable that a revenue exceeding Rs. 2,50,00,000 will accrue to the Government from the Excise Duty during 1936-37, particularly due to the increase in the excise duty to Rs. 2 per cwt. on factory sugar with effect from 28th February, 1937; and during the year 1937-38, the revenue from the excise duty will be, according to budget expectations, about Rs. 4 crores. In spite of the devaluation of the Guilder in September, 1936, we do not apprehend any increase in import of sugar from Java, as Netherlands Indies has increased the price by an amount proportionate to the depreciation of the Guilder. As Java's stocks of sugar have been depleted, she is longer anxious to unload them in India at any price. If, however, any such tendency is noticed, the Governor-General-in-Council can press into immediate use the power he has under section 2 of the Sugar Industry (Protection) Act, 1932, to increase the import duty to such extent as he thinks fit by notification in the Gazette of India (it is not incumbent on him to undertake any official enquiry before increasing the duty).

It is sometimes stated that the protection to the Sugar Industry constitutes a heavy burden on the consumers. A careful appraisal of the situation would, however, show that the country as a whole has benefited by this policy of protection. We have it on the testimony of Sir T. Vijayaraghavacharya, a former Vice-Chairman of the Imperial Council of Agricultural Research, that a sum which went up to as much as 16 crores of rupees representing the price we paid to foreign countries, mainly Java, for the sugar we consumed in India remains in India to fructify in the pockets not alone of the capitalists, factory owners, but also of the employees of the factories, of the ryots who produce the cane in increasing quantities to meet the increasing demand from the factories, and of the agencies employed in transporting the cane which include not only the lordly railway companies but also the owner of the humble country cart, motor-bus, and the servants of these agencies. The area under cane has also gone up and this shows that the cultivator has benefited from the policy of protection which has enabled him to receive a better price for his cane than from other crops. That the Indian consumer has not to pay more for his sugar can be proved by statistics too. During the four years 1910-11 to 1913-14 the average annual net imports of sugar into India amounted to 620,000 tons. The value of this sugar including duty 19,95 lakhs of rupees. Compare these figures with those for the year 1934-35. The estimated production of sugar from cane was about 578,000 tons valued at about Rs. 12,50 lakhs. This comparison would show that the consumer paid no more for his sugar in 1934-35 than he did in the five years preceding the war. If allowance is made for the fact that while the pre-war sugar paid duty at 5 per cent. and the 1934-35 sugar paid an excise duty of Rs. 1-5 per cwt. which works out at 15 per cent. of current prices, *it can with fairness be stated that the net cost to the consumer is considerably lower to-day than what it was a quarter of a century ago. In fact, we are selling sugar far cheaper to-day even with the increased excise duty of Rs. 2 per cwt. than the rate visualised by the Tariff Board at the end of the period of protection of 15 years i.e., in 1946.* Out of the 12,50 lakhs of rupees, the price paid for cane represents 6,00 lakhs, transport charges 1,20 lakhs, wages of labourers

2,00 lakhs, and salaries of educated staff, 50 lakhs. Besides this, the industry has provided employment to about 2,000 Science graduates, 10,000 other educated staff, and 100,000 skilled and unskilled workers. What is more, there has been a progressive fall in the price of sugar during the last few years, and indeed the price of Indian sugar to-day is considerably lower than the price of Java sugar, which goes to prove that the policy of protection instead of doing any harm to the consumer has enabled him to get his sugar much cheaper.

In fact after a careful appraisal of various relevant factors, *e.g.*, the phenomenal progress of the industry during a brief period of five years, the reduction in the price of sugar brought about during this period, the almost complete independence the country has achieved in the matter of supply of an important article of diet of daily consumption, the improvement in the condition of millions of cultivators as a result of realisation of a better return from the cultivation of the cane-crop, the relief afforded by the development of this industry in the severe problem of unemployment particularly among educated and technical men, the scope for profitable investment which was afforded to indigenous dormant capital during a period of acute world-depression, the development witnessed in the village industry of manufacture of Gur, a very nutritive and unique article of direct consumption by millions in our country, as can be seen from an increase in the production of Gur from 2,772,000 tons in 1931-32 to over 4,105,000 tons in 1935-36, and the confidence established about India's ability in development of industrial enterprises, if suitable opportunities are created, any unbiassed observer cannot help feeling that the *development of the Indian Sugar Industry constitutes the most conspicuous example of the success of a protected industry*, and completely vindicates the policy of protection adopted by the Government of India for the last decade or so. It has been really unfortunate for the industry that the Government should have increased the excise duty from Rs. 1-5 per cwt. roughly equivalent to Re. 1 per maund to Rs. 2 per cwt. on vacuum pan sugar with effect from the 28th February, 1937, and from As. 10 per cwt. to Re. 1 per cwt. on *Khandsari* with effect from April, 1937. I am appending herewith a note on the "Increased Sugar Excise Duty and its Implications" dealing with the adverse effects of the increased excise duty on the industrialists and cultivators. I am also appending herewith copies of my paper on "A Revised Tariff Policy for India", contributed to the Indian Economic Conference in 1937, and of my article specially contributed to the *Empire Journal* in February, 1937, on "Sugar Industry vindicates policy of protection". In this connection I would also invite your attention to a special article contributed by me to the *Industries Supplement* of the "Capital" in December, 1936.

I would now invite your attention to the directions in which the Industry should devote its energies for increasing its efficiency. The greatest necessity of the Industry at present is to make improvements in the cultivation and quality of sugarcane, its raw material. The conditions of sugar production in India are peculiar and have hardly any parallel elsewhere. Here the manufacturers generally do not produce the raw material as they do in Java and other countries from their own extensive plantations round about the factories, but they depend on a vast number of agriculturists with small holdings of land. This being so, it becomes the duty of the industrialists and the Government to initiate well-conceived schemes of research, and to demonstrate to the cultivators the possibility and desirability of improving the quality of cane and of increasing its tonnage with a view to obtain at once a greater monetary return per acre of land and to enable the industry to be established on sound lines. Recently, 110 tons of cane were produced on an acre of land at Bombay, and I feel that in the United Provinces and Bihar, it should be possible with a serious effort, to grow 40 to 50 tons of cane per acre (instead of 16 or 17 as at present) yielding 4 to 5 tons of sugar per acre. To achieve this objective, the Government

and the Industry should redouble their efforts to establish intimate contact with the cane cultivators and to initiate them into better methods of farming, manuring, rotating the crop, etc., by actual demonstration. For this purpose, it is essential to establish a series of demonstration farms and nurseries in all cane-growing provinces so that they may devote their energies to the propagation of canes of higher sucrose content of higher tonnage, and of early and late-ripening varieties which would be very helpful to the industry in extending the crushing season, and thus reducing the cost of production of sugar*. It would also be helpful if the Tariff Board made suitable recommendations to the Government in assisting the factories to obtain land in the vicinity of the factories for researches in cultivation of suitable qualities of cane.

Out of the proceeds of the excise duty on sugar, a sum equivalent to one anna per cwt. has been set aside by the Government to serve as a fund to be distributed among the cane-growers so as to help them in securing fair prices or for other purposes directed to the same end. During the year 1935-36 out of a total sum of Rs. 11,94,000 so provided, the amount allotted to the United Provinces was Rs. 5,40,000 and to Bihar Rs. 2,90,000. The United Provinces Government have inaugurated a cane-development scheme in areas adjoining sugar factories, whose main objectives are to improve the methods of cultivation in those areas, supply better seeds and manure and to encourage the growth of suitable varieties of cane to ensure a systematic supply. The Bihar Government have also inaugurated a sugar-cane improvement scheme since 1935, and this aims at increasing the acre yield by bringing home to the grower improved methods of cultivation, manuring, etc., while the distribution of the new improved varieties, viz., C. I. 299 (early) Co. 313 (medium early) and Co. 331 (late) is likely not only to result in a higher yield per acre, but also to prolong the season, and at the same time, to afford better recovery to the factories at the beginning and at the end of the season.

In 1934, cane prices were fixed by the Local Governments of the United Provinces and Bihar varying with the price of sugar every fortnight. Conferences are convened annually by these two Local Governments for considering questions pertaining to the modification of the basis on which the minimum price is fixed, in order to secure a more equitable distribution between cane-growers and factory owners, etc., in the light of the new experience gained during the previous season of the working of the sugar-cane rules. In July and September, 1936, such conferences consisting of representatives of Government, manufacturers and cane-growers were held at Nainital in the United Provinces and at Patna in Bihar respectively. Various questions were discussed and among them were proposals for fixation of minimum prices of cane on a quality basis, and of an introduction of a graduated scale of minimum prices rising higher with the advance of the season, with a slight fall towards the end of the season. The manufacturers expressed their disagreement with the suggestion of introduction of varying prices according to quality of cane, or according to the earliness and the lateness of the season, largely because they were afraid of practical difficulties, e.g., (1) cane would not be brought by cultivators during the middle of the season and would be held up till a later date awaiting an increase in the prices, and (2) there would be difficulties in the determination of the sucrose content of each cart of cane, as hundreds of carts belonging to different farms were being used daily in the factories, etc. The question has been raised on various occasions in various parts of the country for fixation of the price of cane dependent on sucrose content of the cane and it would be very helpful if the Tariff Board went into the question, considered its

* Definite figures are not available, but we understand that the cost of production of cane varies from about 2 As. to 9 As. per maund, in the various Provinces.

practicability and made concrete suggestions for the consideration of the various provincial Governments.

In fact, in view of the continuous fall in price of sugar since 1933, and the consequent declining profits, the manufacturers asked for a reduction in the price of cane, and also urged that deduction from price of cane ought to be allowed for transport charges for cane brought from long distances, etc. There has not been any material change in the basis of the fixation of the minimum price of cane, during the 1936-37 season, although there is a noticeable tendency on the part of the various Local Governments to increase, if possible, the prices of cane for further benefiting the cultivators, out of regard for the pressure of public opinion as expressed through the Provincial Legislatures, and the possibility of their deriving revenues, land dues, etc., more easily from the cultivators if their condition was improved by their getting higher monetary return from the cultivation of cane. I understand that a Sub-Committee has been appointed by the United Provinces Government to report upon the feasibility of fixing a minimum price of cane on a quality basis. I also understand that the United Provinces Government are considering the question of appointing a special Committee to inquire and make recommendations about the steps to be taken to improve the quality of cane, having regard also to its tonnage, to improve facilities for transport, and devise an equitable basis of payment of cane, according to quality, and to introduce such measures as would improve the quality and reduce the cost of producing cane. The United Provinces Government have also decided that with effect from 1936, the minimum price of cane should vary with the price of sugar throughout the crushing season, instead of only after the 15th December, as was the practice hitherto.

The Local Governments of the United Provinces and Bihar are taking a keener interest in the improvement of the quality of cane, since 1935, and they have also drawn up comprehensive schemes with the primary objects of effecting improvements in the cultivation of cane.

Apart from making serious efforts for improving the quality of the raw material, the Sugar Committee of the Imperial Council of Agricultural Research, recommended in 1935, raising the standard of sugarcane cultivation, combating the disease and pests, dissemination of information concerning improved methods, adequate demonstration and the more rapid multiplication and introduction of new seedling canes of proved value, and their supply to cultivators. The interest of the industry lies in ensuring by taking all necessary measures through research*, education, propaganda, contact with the cultivators, etc., and by promoting the adoption of electro-culture† for improving the growth of cane, and curing diseases, as was done in the United Provinces in 1935, that the price of supply of cane is brought down to about 2½ annas per maund as in Java‡, for then alone it will be possible for India to sell sugar on competitive terms in the world markets. While manufacturing efficiency is no doubt important and efforts are being made in that direction,§ improvement in agricultural efficiency, and the production of cane with higher sucrose content are still more important.

* Commendable research-work in improving qualities of cane is being carried on by Rao Bahadur T. S. Venkata Raman at the Coimbatore Research Institute. Other research centres established by the Imperial Council of Agricultural Research, in the main sugarcane belt of Northern India running from Peshawar to Assam, are also doing useful work.

† Electro-culture is the science of securing better growth through the application of electrified water for watering the roots.

‡ In January, 1937, the minimum price of cane to vacuum-pan factories was reduced to 4 as. 3 p. per maund, which corresponds to a price of sugar at between Rs. 6-8 to Rs. 7 per maund.

§ The questions of fuel-economy, and of accurate control of macera-

It must be noted, understood and emphasized that the cost of cane is the most important element in the competition, with other countries, and both the quality of cane and the tonnage per acre must be improved considerably.

Better facilities for quicker transport of sugarcane by improving the condition of existing roads, construction of new roads, laying of tramway lines and the utilisation of ropeways by factories, with a view to ensure the arrival of fresh cane for crushing and the fixation of lower rates of freight by railways and steamship companies for transport of sugar particularly to long distances, including Burma, are directions in which the industrialists should also turn their attention with a view to reduce the price of sugar still further.

A review of the working results of the factories during the season 1935-36 and the season 1936-37 will show that larger and larger quantities of gate cane are being available to the factories as compared with rail cane. In fact some factories in Bihar and United Provinces depend entirely on gate cane, e.g., the Marhowra factory of Messrs. Begg Sutherland & Co., and the Gauribazar Factory of Messrs. Begg Sutherland & Co., in the United Provinces. If this tendency is encouraged it would help in the recovery of a larger percentage of sugar due to the freshness of the cane and would also make the factories independent of the bad conditions of the roads about which several complaints are being made, and which need to be improved by the allocation of funds in the hands of the Local Governments for purposes of road development.

Amongst other problems yet to be tackled by the industry, the most important one is that of utilisation of bagasse for cardboard manufacture, etc., and of molasses (the production of which was estimated at about 337,128 tons in 1935-36) in the production of power alcohol for use as a motor fuel. Practically all the countries in the world producing sugar, have legislation which makes it compulsory to mix power alcohol in certain proportion with petrol for use in internal combustion engines. The distilleries in India also feel that power alcohol produced from modern plants and sold for admixture, as in European countries, is capable of competing with petrol both as regards price and performance specially in the upcountry markets where molasses is cheap and petrol more expensive. The question of the disposal of surplus molasses was also discussed at a meeting of the Sugar Committee of the Imperial Council, held in July, 1935, and it was urged by the manufacturers that something should be done to get a return to the factory owners of at least 8 annas per maund for the molasses. It is a matter of regret that at that meeting Sir Bryce Burt speaking on behalf of the Government observed that the utilisation of molasses for the production of power alcohol for use as motor fuel was out of the question. He also explained the difference between the position in India and those countries which have thus introduced legislation. The streak of hope now left is that although the Government of India have at present decided not to initiate experiments for the production of power alcohol from molasses on a commercial basis, they have reserved the right to do so, if at any time in future it should appear that the scheme of the export of molasses did not provide an adequate solution of the problem of molasses.*

Petrol is an indigenous production of India and Burma, and the Government derive large amount of revenue from the excise duty levied on it and they are anxious not to effect any further loss in their revenue. It is understood, however, that power alcohol could stand the imposition of an excise duty even, and could be sold at competitive prices with petrol, particularly in the up-country markets. It therefore behoves the Government to give this matter their close attention. It would be desirable for the Industry, however, not to remain idle, relying on persuading the Government to change their attitude, but to devise other measures in which

* During 1935-36, the export of molasses was only 1,415 tons, and during the 12 months ended March, 1937, it was 14,195 tons.

molasses can be utilised advantageously, in various other directions, *e.g.*, as nitrogen manure for fertilising land, as fuel, as road-surfacers, for the manufacture of dry ice, etc.

Another very important problem now facing the industry is the problem of marketing of sugar. As is well-known, most of the sugar (more than 86 per cent., if *Khandsari* sugar and sugar manufactured from Gur are included) is produced in the United Provinces and Bihar, and this production is far in excess of the consumption of sugar in these provinces, and this necessitates a scientific distribution of sugar in the various parts of the country, in a manner which would avoid overlapping, which would eliminate internal wasteful and unrestrained competition, would minimise freight charges by a well ordered system of distribution of sugar from various producing centres to the adjacent consuming markets* and would also eliminate imports of foreign sugar as far as possible with a view to keep the Indian market entirely for the sugar manufactured in India. To achieve these objects, it is essential to bring into existence a Central Marketing Organisation, on the lines of the Nivas of Java, which would undertake to sell sugar jointly on behalf of the various sugar factories. An effort was made in this direction in the year 1934 and the preliminaries and the nucleus of the organisation of a Central Sugar Marketing Board, were also completed, but due to the absence of requisite support among manufacturers, and the initial difficulties in launching such a big and new venture no headway was made with it. The present selling arrangement of sugar by factories is hardly one which would reflect credit on such a large industry. However, it is a matter of some satisfaction to learn that the Indian sugar mill-owners have again begun to feel that steps should be taken immediately in this direction, if the internal and avoidable cut-throat competition is to be eliminated, and if the full benefits of protection are to be availed of by the industry. At a conference of sugar mill-owners held in Calcutta in August, 1936, this question was brought up for consideration and it is understood that proposals are afoot for bringing into existence a Central Marketing Board. A limited liability company is proposed to be established for undertaking sales of sugar jointly on behalf of the participating factories. Until, however, definite sugar Standards are established, and sugar is produced in accordance therewith, and until complete confidence is engendered in the minds of the various manufacturers in the impartial working of such an organisation for equal benefit of all, it is difficult to visualise the scheme being brought into operation. We hope that with the example of the recent successful cement marketing scheme before them, the sugar manufacturers should be able to evolve a scheme of organised sales of sugar which would enable them to utilise fully the advantages of protection and thus to pave the way for the establishment of the industry on sound lines. We cannot conceal our feeling, however, that a superhuman effort is necessary to achieve desired results, particularly as the sugar industry is not so well-knit and organised as, for example, the cement industry.

Another question which must engage the attention of the Industry is of devising a suitable Contract form for sale of sugar. There has been a considerable lack of understanding in regard to the terms of the contract form suggested by the Indian Sugar Mills' Association, by the trader. The Sugar Merchants' Association of Cawnpore, and Bombay feel that the terms unduly favour the manufacturers and are such as would put the merchants

* The producing areas are different from consuming areas. In Bengal, for instance, the development of this industry has been niggardly, although the conditions are satisfactory. There are only 4 big-sized mills and one is projected for this year. While Bengal consumes roughly 130,000 tons of sugar annually, she produces only about 15,000 tons, or about 1/8th of her total consumption. The balance therefore has to be transported here from United Provinces and Bihar mills.

at a disadvantage, due particularly to the inclusion of vague phrases like "fair average quality", etc. This is a matter which must be settled amicably and without avoidable delay, as it is undesirable to antagonise merchants, if maximum results are to be obtained from the present policy of protection.

One other important question which has now begun to engage the attention of the Sugar Industry is in respect of restriction of further sugar factories, in view of the stage having been reached when the existing factories can produce all the sugar that India needs. Suggestions have been made for introduction of a system of licensing by the Government, but with the known attitude of the Government of India about non-intervention in the affairs of private enterprise as far as possible, as was recently witnessed when the jute industry approached them for legislative restriction of hours of work in factories, it is not likely that they will view with sympathy any such proposal in the case of the sugar industry. The Government appear to believe at present in the policy of survival of the fittest and it is improbable that they will take any legislative action to prevent the erection of new factories either in the United Provinces and Bihar which appear to be congested or in any underdeveloped Province like Bengal or Madras or Bombay, or in the Indian States, *e.g.*, Mysore, Hyderabad, Bhopal, Travancore, which are making efforts for increasing the production of sugar in their territories. As soon as it is realised that the profits from the manufacture of sugar are not very attractive, and the prospects are not bright, there will be an automatic check to the establishment of new factories. The number of new factories established during the last year has been remarkably small owing to the spread of knowledge that the production of sugar is equal to the present consumption,* and we feel that the incentive for the establishment of new factories, particularly after the imposition of an excise duty of Rs. 2 per cwt. unless there are exceptionally favourable circumstances in any particular case, will be decidedly on the wane, in the future.

Among other urgent questions which should engage the serious attention of the sugar industry, are the improvement in the quality and purity of sugar, the production of which is exceeding the present estimated consumption, and the methods of disposal of the surplus production which is bound to be witnessed in 1937, unless the consumption within the country increases as a result of the reduction of the price of sugar, or of an improvement in the economic condition of the people, or by replacement of Gur to some extent, or of discovery of other industrial uses of sugar. One channel for the disposal of our surplus production is the market of the United Kingdom, but this is possible only if a more refined and superior quality of sugar is produced, and if a suitable preference in the import duty is granted to it. This latter appears to be feasible as the United Kingdom market is depending to a large extent on imported sugar from Non-Empire countries. It has been estimated that the United Kingdom imports about 17 lakhs tons of sugar of which $\frac{1}{3}$ are imported from "foreign" sources while slightly less than $\frac{1}{3}$ are imported from "Empire" countries (including "Colonial"). Most of the imports into United Kingdom are of raw sugar, *i.e.*, 96° polarisation. The rates of import duty on sugar of 96° polarisation are as follows:—

	Foreign Cwt.	Empire Cwt.	Certified Colonial Cwt.
	S. d.	S. d.	S. d.
96° but not exceeding			
97°	8 4·3	4 6·3	1 5·3

* If worked to their full capacity and for a full season, Indian factories as at present equipped, can produce over 1,200,000 tons of sugar in one year.

After paying import duty as above, the Sellers' price of each of the above class of sugar in the United Kingdom port markets will be as follows:—

	s.	d.
Foreign	14	5·8
Empire	14	4·8
Mauritius (Colonial)	12	0·8

The c.i.f. price of Indian sugar at United Kingdom ports works out at Rs. 9·2 per cwt. or 13s. 3·2d. per cwt. It will thus be seen that whereas the price of Empire and Colonial sugar in the United Kingdom comes to 14s. 4·8d. and 12s. 0·8d., respectively, after paying import duty at their respective rates, the price of Indian sugar c.i.f. United Kingdom ports comes to 13s. 3·2d. per cwt. If Indian sugar is therefore completely exempted from paying import duty in the United Kingdom it will be in a slightly favourable position as compared to Empire sugar. As compared to Colonial sugar, however, it will have a disadvantage of about 1s. 8d. If Indian sugar is admitted under "certified Colonial" sugar, its prices in the United Kingdom markets after paying duty will be about 15s. 1·5d. as compared to 14s. 4·8d. and 12s. 0·8d. respectively for Empire and Colonial sugar. It may also be possible for the Government to arrange for a reduction in the rates of freight on steamer and railways to assist the export of sugar to the United Kingdom. If this is possible, this channel promises to improve the situation in the Indian Sugar Industry and as such should receive the anxious consideration of the Government as well as the industrialists. If the requisite preferential duty were granted, it would be possible for India to keep the United Kingdom market as an outlet for its surplus production. The possibility is there and I hope advantage will be taken of this opportunity of tapping a new market by the Indian industry. I also trust that the Tariff Board will make detailed investigations into this aspect of the matter and will make definite recommendations to the Government, for considering the possibility of securing suitable preference, in connection with the proposed Indo-British Trade Agreement.

It is gratifying to note that there has been a considerable improvement in the average recovery of percentage of sugar from cane during the last 5 years, as can be seen from the following table. In fact, even in this respect, the industry has exceeded the expectations of the Tariff Board, 1931, during a period of only five years, and the average recovery percentage for 1935-36 has been higher than any previous year, and the highest on record in India.

Average Percentage of Recovery of Sugar from cane in factories in India, and in Java—

	India Average per cent.	India Maximum per cent.	Java Average per cent.
1931-32	8·89	10	11·92
1932-33	8·66	10	11·16
1933-34	8·80	10	12·64
1934-35	8·66	11·10	12·35
1935-36	9·29	11·34	

There is no doubt however that a still higher recovery could be obtained as in Java, if suitable thought is given to this matter, by avoiding over-crushing, by securing suitable quality of cane, and in a fresh state, etc. We hope the factories will devote their attention to this direction, and thus increase their efficiency further.

I am not dealing in the body of this memorandum with the effects of the increased excise duty on the various sections of the industry as I have done so elaborately in the article appended hereto. The imposition of the increased excise duty has resulted in a reduction of the profits of the sugar factories inasmuch as they had to absorb the bulk of it and at the same time it has also affected the cultivators of cane adversely, for the factories with the reduced profits are not willing to crush cane during the latter part of the season when the recovery percentage becomes low due to the drying of the juice in the cane. As large crops of cane were standing both in United Provinces and Bihar and as it was not possible for these crops to be utilised in any other manner profitable, the Government of United Provinces and of Bihar have had to effect considerable reductions in the minimum price of cane during April and May, 1937, and have also appealed to the factories to keep on crushing as long as they do not actually incur a loss. There is no doubt therefore that the increased excise duty will have very undesirable repercussions on the condition of the cultivators of cane whose biggest profitable outlet for supply of cane, is the factories, the return from the sale of cane to Khandsari and to gur manufacturers being very nearly half of the return realised from the sale of cane to vacuum-pan factories.

The effect of the increased excise duty on undeveloped provinces like Bengal would be very severe as the factories have had no opportunity of building up reserves, etc. There has been a fairly good supply of cane available in Bengal and the area under cultivation of cane has also gone up during the last three years, viz., 257,000 acres in 1933-34, 276,000 acres in 1934-35 and 325,000 acres in 1935-36.

The average percentage recovery of Setabganj Sugar Mills in Bengal during the year 1935-36 was 8.56 and the average recovery percentage during the current season upto 10th April, 1937, for the factory at Gopalpur has been 9.12 and for the factory at Beldanga 8.60 per cent. The factories in Bengal hope to have still greater recovery percentages, as a result of the improvement in the quality of cane, and the availability of cane in the vicinity of factories.

The salvation of this great national industry, which is second only to the Cotton Textile Industry, and which represents an investment of indigenous capital to the extent of Rs. 30 crores, which has been responsible for utilising the energies of hundreds of graduates in Science, Engineering, Commerce, etc., which has afforded to some extent a solution of the problem of unemployment for the middle classes, by creating a new avenue of employment for them, and which has helped in the improvement of the economic conditions* of over 20 million cane-cultivators whose interests are indissolubly linked with the industry, by bringing them a better monetary yield from the cultivation of cane, lies in regulating and adjusting the production of sugar in relation to its demand, in effecting a reduction in the price of sugar, by improving the efficiency and extraction of sugar, by increasing the duration of the cane-crushing season, by a proper utilisation of the by-products of the industry, and by spending liberally on schemes of research† without which no country can aspire to reach efficiency of an

* It is interesting to note that the sugar mills paid about Rs. 8,33,15,000 (at five annas per maund of cane) and the Khandsari factories for making Gur, rab, etc., paid about Rs. 25,65,01,000 (at three annas per maund), the total amounting to Rs. 33,98,16,000 to cane-cultivators, in 1935-36.

† A Government of India Notification recently stated that having accepted the recommendations of the Sugar Committee, they have started with effect from 1st October, 1936, for a period of five years, the Imperial Institute of Sugar Technology at Cawnpore. A Sugar Section which was maintained at the Harcourt Butler Technological Institute under the supervision of the Sugar Technologist for the past five years has now been taken over, with

order which would enable it to stand competition with other advanced countries, like Java, Cuba, Hawaii, etc. Above all, the Government of India as well as the sugar mills must remember that the expenditure of money on research work is not fruitless expenditure, but a profitable investment,* and is inevitable, if they cherish the hope, which we trust they do, of enabling the industry to occupy an important place among the efficient sugar-producing countries of the world, at an early date.

the concurrence of the Government of the United Provinces, and will be developed into the Imperial Institute for Sugar Technology. Apart from the facilities of an up-to-date building available for the Research Institute, Cawnpore, is the principal Sugar market in India and is situated between the two main sugarcane belts in the west of the United Provinces and the East of the United Provinces, and the Province of Bihar.

At the present time, the Institute will undertake research on:—

- (a) problems of Sugar Technology in general and those of the Sugar factories India in particular;
- (b) the utilisation of the by-products of the industry;
- (c) detailed testing of the new varieties of cane under factory conditions, and
- (d) general problems of sugar engineering and chemistry.

The Institute will also provide adequate facilities for the training of students in all branches of Sugar Technology and to arrange for short refresher courses for men already employed in the industry. It will also be responsible for the collection, tabulation and analysis of scientific control, returns from factories and making the results of detailed study of these returns available to factories in the shape of technical reports. In other words, the Institute is intended to furnish assistance of a scientific and technical nature to all factories which may need it. Besides carrying on research on fundamental problems of sugar chemistry, it will act as the medium for harmonising the latest developments in the Sugar Industry abroad, with the conditions prevailing in this country. The administration of the Institute will be vested in the Imperial Council of Agricultural Research Department of the Government of India. Mr. R. C. Srivastava, Sugar Technologist to the Imperial Council of Agricultural Research, has been appointed as the first Director of the Institute. A representative body has been constituted to advise from time to time on the problems to be investigated at the Institute and to undertake periodic reviews of its activities.

The estimated cost of the Imperial Institute of Sugar Technology is about Rs. 15.87 lakhs including Rs. 14.37 lakhs as recurring grant for a period of five years and Rs. 1.50 lakhs as capital grant, the entire cost being met out of the general revenues. Against this expenditure, receipts aggregating to Rs. 2,25,000 are anticipated during five years. The net cost to the Central Government will therefore be in the neighbourhood of Rs. 14 lakhs over a period of five years including both non-recurring and recurring expenditure which the Government of India have, subject to the vote of the Legislature, agreed to defray.

* While the Government of India should be congratulated for their action in the establishment of the Imperial Institute of Sugar Technology at Cawnpore, it must be stated that the annual grant to the Institute must be considerably increased in order to enable research work to be done on an adequate scale. The Tariff Board recommended a grant of Rs. 10 lakhs per year for Sugar research purposes. The Sugar Committee of the Imperial Council of Agricultural Research also recommended the setting aside of a sum of 2 annas per rupee, out of the proceeds of the excise duty, for research work. We fervently trust that the Government of India will make available to the Institute larger funds for carrying on research—Chemical, Engineering, Agricultural—in view of the imperative necessity

I sincerely hope that having nursed the industry under the impetus of a well-planned scheme of protection, the Government of India will continue to create conditions in which the industry would thrive and be stabilised at an early date. To this end, it is absolutely imperative to maintain adequate protection during the remainder of the period of 15 years for which protection was assured to the industry by the Sugar Industry (Protection) Act, 1932, and to undertake suitable constructive measures of research, etc., for implementing this measure of protection, adopted after a very careful deliberation, for developing this important industry in India. I feel that it would be very helpful to the industry if tariff protection at the rate of Rs. 7-4 per cwt. as is given to it now would continue for a further period of eight years till 31st March, 1946. As has been pointed out previously the price of Indian sugar is not determined by the price of imported sugar and there is therefore no harm in maintaining the duty at this level particularly as with a duty at this level no foreign country will turn its attention to the Indian market where there is no possibility of foreign sugar being entertained. If, therefore, the duty is fixed at this level it will preserve the Indian market for indigenous sugar, and also bring in a slightly increased revenue from the minimum quantity of superior quality of sugar which will be imported to meet the special requirements of people and will not be any burden to the consumers inasmuch as internal competition regulates prices of sugar and indeed, at the present moment it is about Rs. 2½ per maund lower than imported sugar. I also trust that the Tariff Board will pass in review, although not exactly within its terms of reference, the excise duty and its adverse effects on the industrialists as well as the cultivators of cane.

(b) A NOTE ON "THE INCREASED SUGAR EXCISE DUTY AND ITS IMPLICATION"
BY M. P. GANDHI.

It is indeed unfortunate that the Hon'ble the Finance Member should have chosen the present time for increasing the excise duty from Rs. 1-5 to Rs. 2 per cwt. roughly equivalent to Rs. 1-7 per maund and for reducing substantive protection afforded by the import duty from Rs. 7-12 to Rs. 7-4 per cwt. with effect from the 28th February. Considering the various handicaps under which the Indian Sugar Industry is labouring at present, these new proposals are bound to affect the industry very adversely. The principal effect on the industry will be a considerable reduction in the profits and it is apprehended that in the case of smaller and newly established concerns the profits will be *nil* considering the present low prices of sugar and the cost of production of sugar. The Hon'ble the Finance Member has taken some pains to justify his proposals and it would be interesting to examine some of his arguments and their implications.

The Hon'ble the Finance Member has stated that "the main single cause of the present weakness in our revenue position is the virtual disappearance of the revenue from imported sugar. That customs revenue has now practically gone and its place we are to be left with an excise revenue

of the development of the efficiency of the Industry to a high level, at an early date.

In one of their recent Reports, the Tariff Board remarked correctly and with justification that "Protective duties divorced from the constructive measures proposed in connection with them may represent an immediate gain to public revenues, but they constitute in reality an expensive and wasteful form of assistance to industries". We hope the Government will bear in mind the latter remark as there is little doubt that without adequate measures of research, the real purpose of the scheme of protection is likely to be delayed, if not defeated.

Also see Mr. M. P. Gandhi's "The Indian Sugar Industry. Its Past, Present and Future" page 382, and "The Indian Sugar Industry, 1936 Annual".

of under Rs. 2½ crores” True, the imports of sugar have dwindled considerably during recent years. But what else could have been expected? One of the objects of giving protection to an industry is to check foreign imports, which would naturally result in the virtual disappearance of the revenue from import duty. Having given protection to the Sugar Industry, it is now untenable to argue that the receipts from Customs revenue are dwindling and therefore the indigenous industry should pay increased excise duty in order to make up the loss sustained in the Customs revenue. The attitude of the Finance Member, as revealed in his arguments in support of his proposals, is definitely unsympathetic towards the policy of protection in general, and particularly towards this industry, which deserves every encouragement at the hands of the Government, due to the beneficent effects of the establishment of this industry on millions of cultivators. He stated, *inter alia*

“The present level of internal prices is such that the consumer, even when he has fully shouldered the burden of an additional 11 annas a cwt. will be paying no more for his sugar than he was until a very recent date. As regards the manufacturer, I have already mentioned the plight to which overproduction has reduced the industry. In so far as the enhanced excise will check this tendency by eliminating the weak and inefficient producer, it will have a salutary effect, and by arresting further deterioration will preserve the position pending the fuller enquiry which is shortly to be held by the Tariff Board. For the same reason, I believe the effect on the cultivator will also be beneficial, for it is no advantage to him to be induced to grow cane for supply to a precarious manufacturer who cannot be relied on to take the crop off his hand”.

In other words, these arguments are nothing short of a plea for the “survival of the fittest” among the sugar factories. The industry is hardly convinced by the reasoning of the Finance Member for increasing the burden on the industry, because it is as yet too early to think in terms of the “survival of the fittest”, bearing in mind particularly its reaction on industrial enterprise in general. The Government are committed to give protection to the industry for a period of fifteen years, but in less than five years they have begun to impose various handicaps on the industry by levy of high excise duty, by a policy of inaction in regard to utilisation of molasses, by removal of the surcharge in customs revenue, etc. While it should be a matter for pride that the Indian Sugar Industry has made a phenomenal development within a short space of five years, the Government in their anxiety to secure increased customs revenue, are placing impediments in the further progress of the industry. The Indian capitalists, in the hope of making fair profits, has invested a huge amount of money in this industry, but he now finds to his surprise that the opportunity for reaping benefits from this protected industry is fast disappearing due to the change brought about in the outlook of the Government towards development of industries, through a policy of protection, even though it was adopted by them after a very careful deliberation. The cultivator has also increased the area under cane-cultivation. If the industry is handicapped, if some factories close down, he will also suffer, as he will be unable to dispose of his cane crop profitably. This will have adverse effects on the agricultural economy of the country in general, as, if he turns to other crops he will bring about a fall in price of other crops too.

What is more, several of the newly established factories will perhaps find it unprofitable to work their factories particularly during the beginning and end of the season when the recovery from sugar is low and if therefore they close down the factories earlier, and start the factories later, it will also have very undesirable repercussions on the agriculturists who will have to consider alternative methods of disposal of their cane, viz., for the production of Gur or Khandsari which again can only give them for lower

prices for their cane as compared to the vacuum pan factories. Thus, along with the industrialists, the cane cultivator will also suffer.

So far as the public in general is concerned, they resent that the Government of India is attempting to introduce the pernicious policy of levying excise duty on indigenous industries. Excises which are virtually taxes on production are very loathsome, and tend to curb the growth of industries in the country. The history of the excise duty on cotton piecegoods has left very bitter memories behind. Under a doubtful and half-hearted protective system, the capitalist will find it unsafe and unremunerative to invest his money in industries, and consequently the potential wealth of the country would remain unexploited.

Not content with enhancing the excise duty on sugar, the Hon'ble the Finance Member has also reduced the substantive protection to the industry by 8 annas on the ground that "there is no necessity or justification for maintaining any addition to the substantive protection of Rs. 7-4 a cwt." because "Indian sugar is being sold at prices below the price of imported sugar". The prices of indigenous sugar are no doubt far below the price of imported sugar, and, indeed, there has been a sudden fall during recent months. Another important effective of the removal of the surcharge in import duty is that it tends to prejudice the issues before the Tariff Board which has just now been constituted to enquire into the Sugar Industry. Especially when the Government do not anticipate any increase in the customs revenue from this source irrespective of the removal of this surcharge or not, there is the least justification for making this change at the present juncture, as it is not only likely to prejudice the case of the industry before the Tariff Board, but will also produce unfavourable reactions in the minds of the industrialists and the general public.

If the Government of India do not really anticipate any increase in the imports of sugar arising out of this removal of the surcharge it is up to them to reassure the industry that in the event of there being a possibility of increased imports, they will not hesitate to take immediate action in increasing the import duty to the required extent. Under section 2 of the Sugar Industry Protection Act, the Governor General in Council is empowered, in case he is satisfied after such inquiry as he thinks fit, that sugar not manufactured in India is being imported into British India at such a price as is likely to render insufficient the benefits intended to be conferred upon the sugar industry, to increase, by notification in the *Gazette of India*, such duty to such extent as he thinks fit.

In view of the rapid progress made by the industry within a short period of five years, and in view of the unfavourable effects that would be produced on the industry by these proposals, and in view of the urgent necessity of stabilising this industry on a firm and sound basis and in view of the adverse vote of the Legislative Assembly, it is very desirable that the Viceroy should have certified the Finance Bill, and imposed the additional excise duty by 11 annas per cwt. In view of the decision of the Assembly, the Government should have at least deferred action, till the Tariff Board had investigated fully into the conditions of the industry and submitted their report. But, in a sense, would it not have been surprising too, if the Government accepted the Assembly's verdict?

1 (b) *Letter, dated the 18th May, 1937, from Mr. M. P. Gandhi.*

In continuation of my Memorandum, dated the 30th April, 1937, I beg to submit a short note on the effects of the Sugar Excise Duty, particularly on the cultivators of cane.

Enclosure.

SUGAR EXCISE DUTY.—ENHANCEMENT CRIPPLES CULTIVATORS.—IMPROVED SUGAR SALES ORGANISATION ESSENTIAL BY M. P. GANDHI.

Since the enhancement of the excise duty on sugar from Rs. 1-5 per cwt. to Rs. 2 per cwt. with effect from the 28th February, 1937, the course of

events in the sugar industry show clearly that inspite of the belief of the Hon'ble the Finance Member that the duty will not affect adversely cultivators of cane, it has definitely had such effect. The sugar manufacturers have doubtless been affected by the additional excise duty amounting to about 7½ annas per maund inasmuch as they have been able to increase the price of sugar only to the extent of about 3 annas, since the 28th of February. They have thus been left to absorb about 5 annas per maund of the additional excise duty. During the year 1936-37 due to the production of sugar having reached a level where it is practically equal to, if not slightly higher than, the present Indian consumption of about 11 lakhs of tons, and due to the internal unrestricted competition resulting in a considerable reduction of the price of sugar, the profits of the manufacturers of sugar have been considerably curtailed and the imposition of this further burden at this stage has doubtless handicapped the manufacturers. In such a state, it would be hardly possible for them to continue crushing of cane in the months of April and May when the recovery of cane goes down considerably from 9 per cent. to say 7 per cent. due to the dryage of juice in the cane and particularly when it is accompanied by low prices of sugar. Finding that it was not possible for them to manufacture sugar at a profit, when the recovery fell to as low as 8 per cent. the manufacturers decided to stop crushing of cane.

The Government of the United Provinces and of Bihar felt, however, that the cultivators of cane would be in a serious plight if the manufacturers desisted from crushing cane, as large crops of cane were standing in the fields which could not be utilised in any other channel. As is well-known, the factories constitute the most profitable channel for the disposal of cane inasmuch as the price paid by them is roughly about twice the price paid by the Khandasaris or Gur manufacturers. These local Governments, therefore, appealed to the sugar manufacturers to continue crushing as long as possible particularly as long as the factories did not incur an actual loss by crushing, and in order to enable the factories to work as long as possible, they effected a progressive reduction in the minimum price of cane from time to time with a view to compensate manufacturers for the low recovery of sugar from cane and the minimum price of cane in the United Provinces and Bihar was fixed at 3½ annas per maund, during the month of May, 1937. The Government of Bihar further reduced the price of cane brought by rail to 2½ annas during the latter part of May and the price of cane for open pan factories was fixed at 1 anna 8 pies per maund. They also arranged with the railways to reduce the freight on cane by 25 per cent. in order to enable cultivators to get some return from their cane which would have had to be allowed to perish otherwise. While the Governments of the United Provinces and Bihar deserve a word of praise for the very prompt action they have taken in preventing untold hardship to a large number of cane-cultivators by persuading the factories to continue crushing for a longer period, it cannot be gainsaid that inspite of the reasoning of the Hon'ble the Finance Member to the contrary, the cane cultivators have been very adversely hit by the imposition of this sudden and additional excise duty. With a special reduction in the price of cane and on railway freights on cane the plight of the cultivators was alleviated to some extent, and the manufacturers deserve to be congratulated for generously responding to the appeal of national leaders and of Ministers of those provinces in continuing crushing till late in this season. Had they not risen to the occasion, the cultivators would have been left with a large cane crop in the fields which in the absence of any other outlet would have resulted in a heavy loss to the cultivators and would have ruined several of them completely. I also hope that although this question does not fall within its terms of reference, the Tariff Board will incidentally refer in their report to the adverse effects of the imposition of the additional excise duty at this juncture on the industry, and cultivators of cane, and that the Government of India will give their careful consideration to the observations of the Tariff Board in this respect.

As the price of sugarcane is linked to the price of sugar, it would be very helpful to the cultivators as also to the manufacturers themselves, if they could eliminate the present internal wasteful competition in the industry and could bring about an organisation which would pool sugar prices a little higher, and thus improve their position as also of the cultivators. The Agricultural Departments of both the United Provinces and Bihar which produce about 85 per cent. of the sugar manufactured in India feel very strongly that the sugar industry should have some organisation by which it would be able to sell their sugar at rates somewhat better than at present, as it will benefit cultivators of cane also. The consumer of sugar will not be adversely affected by a small rise in the price of sugar, as after all he is getting his sugar far cheaper to-day than he could have dreamt of a few years ago, thanks to the miraculous development of the sugar industry during a period of five years. If prices of sugar are a little higher, it would also assist the factories in undeveloped provinces like Bengal to derive some profits. With a fair margin of profit the manufacturers can easily be induced to prolong the crushing season and thus to consume larger quantities of cane, and in turn give a larger amount of money to the cultivators of cane. In this connection it will be of interest to note that the Sugar mills paid about Rs. 8 crores, 33 lakhs to cane cultivators in the year 1935-36.

It is understood that a proposal is now under the active consideration of sugar manufacturers for the establishment of a Syndicate for undertaking joint sales of sugar, with the object of effecting some improvement in the price of sugar. About 85 per cent. of the sugar factories have expressed their desire to join such an organisation and it is hoped that they will be able to start the organisation before long to effect sales of the present stocks of sugar estimated at about 500,000 tons jointly, and to reap in a larger measure the benefits of protection to the industry. If the organisation now contemplated by the industry meets with success, it will pave the way for the launching of a Central Sugar Marketing Board with effect from the commencement of the next cane crushing season in November, 1937 and due to the fair price of sugar which will be realised thereby, it will doubtless improve the position of the industrialists as also of the cane cultivators without adversely affecting the consumers who get their sugar at remarkably low prices and which stand no comparison with the present price of imported sugar which is about Rs. 24 per maund higher than the price of Indian sugar.

1 (d) Letter, dated the 2nd December, 1937, from Mr. M. P. Gandhi, Rohtas Industries, Ltd., P. O. Dalmianagar, Dist. Sahabad.

I have already submitted two memoranda to you, one in April, and the other in August, 1937, and I am compelled to submit still another one in view of a matter of great importance to the industry, which has come to my notice, even at a very late stage in your enquiry.

I understand on good authority that Java is increasing her production of sugar next season to about three times its production in 1935 and 1936. The following table will be illustrative:—

Production of sugar in Java in long tons.

1935.	1936.	1937.
505,528	583,029	1,405,000

Due to the outbreak of hostilities between China and Japan, her markets in China and Japan have naturally been and will be restricted. What is more, Japan will import a smaller quantity of brown sugar from Java, which she used to re-export to China in the form of Japanese whites. Under the circumstances, it is not inconceivable that, in order to dispose of her

large production, Java may turn her attention once again to the Indian market next year, and unload a part of her production by reducing her c.i.f. price at the Indian ports, as she has recently done in other countries for effecting sales of her sugar. To counteract such a tendency, it is absolutely essential to maintain tariff protection for the sugar industry at least at the present level after 31st March, 1938, and also to empower the Government to impose a higher protective duty without any further elaborate enquiry, and delay, should conditions make it necessary, with a view to safeguard the Indian sugar industry which has now reached the stage of self-sufficiency. The consequence of any import of sugar in India at this stage will be disastrous for the Indian industry which has been reared up under a policy of protection, and in which indigenous capital to the extent of Rs. 30 crores has been sunk, and relying on the continuance of which, the area under cane cultivation has increased tremendously.

I would, therefore, request you to bear this fact in mind while making your recommendations, and to draw the attention of the Government of India as well, to this probability, in order that the Government of India may consider this factor carefully while arriving at their decisions about the extent of the tariff protection to be conferred on the sugar industry during the remainder of the period of protection, i.e., up to 31st March, 1946. It is hardly necessary for me to emphasise that, if there is any increase in the import of sugar from foreign countries at this stage, the Indian industry and consequently the Indian agriculturists also, will be very hard hit.

- 2 (a) *Memorandum, dated the 20th September, 1937, submitted by Mr. Ramani Ranjan Choudhury, Author of the "Prospects of Cane Sugar Industry in Bengal".*

GENERAL QUESTIONNAIRE.

8. Most of the spare parts for sugar factories are now available in India, the reputed suppliers in this side of the country being:—

- (1) The Port Engineering Works Ltd.,
- (2) Burn & Co. (Martin & Co.),
- (3) Shalimar Works Ltd.,
- (4) John King & Co.,
- (5) James Alexander & Co., Ltd.
- (6) Saran Engineering Co., Ltd.

9. (i) So far as Bengal is concerned, we have reasons not to be satisfied.

(ii) In Bengal the situation is peculiar. The Sugar Industry is not under the Industries but the Agricultural Department, which is partly responsible for Bengal's neglect in taking advantage of the Sugar Protection Act in the past.

My strong opinion from experience and close study is that the Sugar Industry with the Sugarcane farming and crop breeding station with the associate Technological Institute if it comes into being, should be placed under the Director of Industries instead of the Director of Agriculture.

15. In Bengal, cane is not very much damaged by frost. The damage by floods, insects and cane diseases is difficult to be estimated but it is much less than what is usually reported from United Provinces and Bihar. Moreover research in crop breeding and soils in the special provincial conditions is sure to reduce or greatly minimise this damage, including the effects of water-logging with proper system of drainage. There is no good technical guidance available in this province and Cawnpore, is too far off from Bengal, to serve any useful purpose for us.

16. The variety grown and crushed in Bengal now-a-days is almost entirely Co. 213 and other Co. and P. O. J. varieties the latter in the mill farms, indigenous types having been fast replaced recently.

Memorandum.

Field yield is 150 to 350 maunds per bigha in the cultivator's lands. In well-manured and well-irrigated fields, the yield is expected to go beyond 500 maunds in course of 2 to 3 years' development. Even three to four hundred maunds are being had in cultivator's lands sporadically now, in North Bengal districts.

Sucrose content in Bengal canes now is 14 to 16 per cent.

18 (a) & (b). Variation in cultivation in Bengal depends on several causes:—

In expectation of good price, the cultivators in North Bengal, particularly in the districts of Rajshahi and Dinajpur after the erection of factories at Gopalpur and Setabganj, took to sugarcane cultivation extensively but owing to the unsatisfactory terms and dealings of the proprietors or management, complaints had become general against the Marwari mills, particularly in the two districts named. The cultivators having no alternative source of disposal of cane, have to make gur or sell the canes to the gur-makers, sometimes at a heavy loss. The District Magistrates and Collectors of these districts can testify to this state of things. As a result of all this, there is likelihood of the cane acreage being reduced.

(i) Climatic conditions do not affect this variation in acreage or cultivation and they are generally suitable.

(ii) Prices: In Bengal this also does not much affect the cane cultivation as the price of sugar even in the dullest time as on the last occasion was at a greater advantage than other provinces by at least 4 annas to 8 annas per maund.

(iii) *Price obtainable for Gur.*—Rs. 2 to Rs. 4-8 per maund. Bengal being a gur consuming province, molasses has always got a ready demand and last season it sold at a minimum price of 4 annas per maund ex-mills siding.

(iv) Alternative cash crop:—

	Mds. per bigha.	At about per md. Rs. A. P.
Paddy	5-10	1 8 0
Jute	5-6	6 0 0
Gur	20-25	2 3 8

19. In Bengal, the Industry is in its infancy and no restriction is called for.

20. Cost of cultivation of an acre of land in Bengal should not exceed Rs. 50 to 60 including seeds, manures and irrigation on Java method of development. Yield has been obtained up to 400 maunds or more in Rajshahi, minimum 100-150 maunds and by scientific development and irrigation it is likely to go beyond 500 maunds a bigha or 1,200 to 1,500 maunds an acre.

21. *Transportation difficulties.*—Road system should be improved and metallic roads provided for where cane traffic shall exist.

22. (a) This is quite possible and imperatively necessary for development and industrialisation of the under-developed area, specially East Bengal.

(b) I am strongly in favour of acquisition of land for industrial purposes and endorse the views of Mr. B. J. Padshah, in his supplementary note to the Report of the Indian Sugar Committee of 1920. Failing this, there is no alternative but to agree to the zoning system or rather allocation of

special areas. This, however, does not arise where Mill industry is developed at all, for instance in the Division of Chittagong, the State of Tripura and the province of Assam.

24. (a) Yes.

(b) (i) & (ii) No restriction in Bengal, as both erection of new factories or extension of existing factories will be necessary, the provincial needs being far in excess of the productive capacity of all the few working factories.

The whole Province contains vast high land acreage suitable for sugarcane which has got to be developed by scientific agriculture and for this purpose, sugarcane has been found to be the best paying crop.

35. Yes. It is always of great advantage to the mill from economic point of view if it can afford, but the absence of it would provide means of livelihood to many carters, cowmen, etc. For this purpose, road communication should be improved by which the cartage including loading, unloading and bundling, etc., may be brought down to 3 to 6 pies per maund.

49. Yes. This is quite possible. The method is to be determined on the basis of circumstances of the individual situation.

51. The season can be easily extended to November/May if not still later, instead of November to March/April as hitherto.

52. No. Please refer to item 9 (ii).

Besides, a fully equipped crop breeding and soil research station with an Agrico-Technological Institute is an immediate and imperative need for an Agricultural province like Bengal, having no mineral or other resources to fall upon. The research and experiments should include all the basic agricultural crops of the province, such as Paddy, Jute, Groundnut, Potato, etc. Starch Manufacture may be started in large scales with the last-named crop. Special research has to be undertaken for crops to resist water-logged conditions, for which Cawnpore cannot give guidance.

54. All kinds of factory labour are now available in Bengal and I don't agree that such labour has got to be imported at heavy cost from upcountry.

55. The housing arrangements made by the 3 Marwari Mills in Bengal specially in Gopalpur and Setabganj are inhumanly bad and most insanitary without even sanitary privies, etc., and no sincere attention is paid for the staff welfare by the management of these mills. This fact can more precisely be ascertained by either personal visit to the factory conditions or reference to the respective District Magistrate, with whom regular complaints are reported to have been made by clerical to highly technical European staff.

60. Molasses in Bengal is easily sold *ex-factory* and the transportation is effected in railway tank wagons. There is always a ready market for molasses as the combined output of the Bengal factories meet only a fraction of the provincial demand.

62. Surplus bagasse can be sold to the Paper mills in Bengal, who have been evincing interest for it.

63. Molasses may be most profitably utilised in manufacturing the following:—

- (a) Compressed Yeast,
- (b) Alcohol, specially power and denatured alcohol as motor fuel,
- (c) Carbonic acid gas (for refrigeration industry), Vinegar, potash and other fertilizers,
- (d) as also cattle food.

The modern achievement of scientific technique demand the complete utilisation of all industrial by-products with the least possible overhead and labour with elimination of all wastes. In the cane sugar line, molasses provides key to many industries, specially through alcohol and of all this the

manufacture of *Power Alcohol* is the most profitable one, with a very large consuming field. Government should be recommended to permit its commercial production in India, in the interest of the advancement of industries in India.

Just at present Molasses in Bengal fetch a good cash price, which is a great advantage of the Bengal millers, apart from higher sucrose content in Bengal canes, freight and maritime advantage and other economic working facilities.

93. Yes.

94. Yes, but certainly *with official representation from the provinces concerned* similar to the constitution of the "Nivas" of Java.

101. There is a good prospect of confectionary manufacture in Bengal. At present, "Mortons" and "Parrys" cater the market.

105. (i) It has reduced the mill-owner's profit a good deal.

(ii) This has caused a consequent reduction in the price of sugar and its raw material, vitally affecting the economics of the cane growers, which is particularly in evidence in United Provinces and Bihar, specially owing to overproduction, far in excess of the total provincial needs and possible marketing outlets.

106. Please refer to item 60.

108. It has been very greatly effective in United Provinces and Bihar but not in this province, where people have not yet taken advantage of the measure of protection granted by the Imperial Government.

109. I would like the present rate of import duty to continue without any alteration. My reason is if the excise duty is enhanced, it would seriously check the further development of the industry in the under-developed provinces where sugarcane is badly needed, there being no better paying crop. The excise should be reduced as far as probable.

110. (a) To recommend the establishment of a *Crop Breeding and Soil Research Station with an Agrico-Technological Institute under the Director of Industries as referred to in item 52.*

(ii) Transfer of the *Sugar Industry* from the administration of the Director of Agriculture to that of the Director of Industries.

In Bengal the Agricultural Department has not handled the matter of sugarcane farming and sugar manufacture in the right way, which is not a mean cause of the failure of the people in availing of the protection in the last six years. Moreover Sugarcane cultivation (for which the Agricultural Department encouraged) is no good and without a feeder mill industry to utilise the sugarcane crop is no good and it is futile to go in for sugarcane cultivation. Indeed it is more a concern of the Department of Industries than that of the Agriculture, though fundamentally it seems otherwise. Of course it is inter-related but in the present situations in Bengal, I strongly suggest for this.

111. I don't think.

2 (b) *Letter, dated the 18th October, 1937, from Mr. Ramani Ranjan Chowdhury, Mica Specialist and Author of "India Mica", Calcutta.*

References in connection with my book "*Prospects of the Cane-Sugar Industry in Bengal*" (not published).

Page 6 (*Hawaiian Yield of cane and sugar*) and page 32 (*Recovery of Hawaiian sugar factories*).—Kindly refer to the Hawaiian Sugar Manual, 1935 and 1936, which will be available from Messrs. Soorajmull Nagarmull, Managing Agents of the North Bengal Sugar Mills Co., Ltd. I would also suggest you to consult the Cuban Sugar Manual and Puerto Rican Sugar Manual for relative important informations, which also will be available from the library of this firm.

*Page 17 (Annual yields of cane and maturity in Countries other than India).—*Kindly refer to the South African Journal of May, 1937. So far as the Indian Provincial periods of maturity of cane is concerned, it will be found in the Tariff Board reports and evidences (previous). The crop yield of Bengal is estimated on "scientific development" and this is expected to go far higher with new potential variety of cane (such as the latest improved P. O. J. variety of Java, etc.).

*Page 6 (All-India average yield of sugar).—*The figures given namely 1½ to 2½ tons per acre is just as moderate basis. In this connection, as I told you, the highest experimental yield in India has already been obtained by the Belapur Sugar Factory at 110 tons of sugarcane, with 11 tons of sugar per acre (*vide* speech of Mr. J. M. Lownie at the annual meeting of the Indian Sugar Mills' Association).

*Page 31 (Sucrose contents).—*This is of course the sucrose content of the primary juice obtained from the cane. Primary juice, *i.e.*, "not treated", in Bengal, contains 15 per cent. sucrose, which is higher than the whole of United Provinces except that of Central United Provinces where it is 15·3 per cent. These figures, may perhaps be verified, on reference to the Director of Imperial Institute.

*Re. cost of production of power alcohol.—*Dr. H. Arnstein of Philadelphia in his publication on the bye-products of sugar manufacture has given the following cost of producing one gallon of Alcohol, which he writes, were taken from actual operating conditions and based on producing a motor fuel containing 25 per cent. ether:—

Cost for a gallon of Alcohol—	Cents.
Molasses	10·650
Fuel	1·205
Labour	2·055
Interest	1·060
Depreciation	0·700
Taxes	0·800
<hr/>	
Cost of one gallon of alcohol	16·470
Cost of etherization: (25 per cent.) 30 lbs.	
Sulphuric acid	·30
30 lbs. Caustic soda	·90
Labour 1 man per shift (18·00 per 2,500 gal.)	·72
Percentage of alcohol cost to compensate for shrinkage in volume	1·32
<hr/>	
Cost of etherizing 1 gal. of alcohol	3·80

Cost of Denaturant where required:—

U. S. Department permits for this purpose, an admixture of 1 per cent. gasoline, which is sold at ·25 per gallon. This therefore has got to be added per gallon for denatured stuff.

Cane molasses weighing on an average 12 lbs. to a gallon and containing 56 per cent. of total sugar (sucrose and glucose), a gallon of molasses will contain about 6·72 lbs. of fermentable sugar, theoretically will yield ·5467

gallon of absolute alcohol. A practical yield of 85 per cent. is fairly conservative and therefore per gallon of molasses, there will be produced 46469 gallons of absolute alcohol or for the production of one gallon of alcohol 2.15 gallons of molasses will be needed.

By adopting the Potassium and Sodium method, in the "Usines de Melle" plant, the cost is recommended to be far lower and the working costs of this process may be obtained from the Director of Imperial Institute, as also the Engineer of this firm, who I understand has supplied and erected the plant, attached to the Mysore Sugar Factory, Bangalore. Information may also be obtained from Mr. Hiranand Ahuja of 36-G Model Town, Lahore, who is the agent of Compagnie de fives Lille.

Mr. G. C. Kuar, Engineer and Representative of Messrs. Pettree Dorr Engineers, New York, Indian address—C/o. Carlton Hotel, Lucknow, can give you most reliable and thoroughly convincing working costs, on their "pettree" process of manufacture of alcohol.

Taking the figures given above, Indian cost of power alcohol is not likely to exceed annas 8 per gallon and if we pay the duty now payable on imported petrol, the total duty-paid cost would be near about Rs. 1.2 per gallon, against Rs. 1.8 to 1.12 per gallon, the selling price of imported petrol in India. The greater efficiency and economy by the use of power alcohol instead of petrol, should also be taken into account, when computing the comparative figures of costs.

The above I hope covers up the points on which you desired me to elucidate.

(3) *Letter, dated the 17th September, 1937, from Sailendra Kumar Ghosh, Esqr., B.Sc., (Cal.), C.G.I. (Lond.), Sugar Technologist (London and Maurice), 29, Ramkanto Mistry Lane, P. O. Bowbazar, Calcutta.*

I beg to take the opportunity of submitting the enclosed memorandum as a Sugar Technologist and agriculturist as also one vitally interested in the growth and expansion of the Sugar Industry in Bengal. The Board must have received already valuable datas from the circles interested and lest any important points are omitted purposely or by oversight, I am submitting the following on behalf of Bengal.

Enclosure.

MEMORANDUM OF MR. S. K. GHOSH, B.Sc., (CAL.) C.G.I. (LOND.), SUGAR TECHNOLOGIST.

(1) *Bengal a most Suitable Province for Sugarcane Farming and Sugar Mill Industry.*

Bengal, it is admitted widely by now, offers the most favourable conditions for economic production of Sugarcane and Sugar, and it may be surprising to those who do not know the actual circumstances prevailing here as to why this industry has not developed well earlier here. With a network of navigable rivers for cheap irrigation, fertile soils, maritime advantages and millions of starving cheap labour and farmers by the country side,—it can be easily imagined that Bengal's cost of production of Sugar is sure to be most competitive in the whole of India. It is misfortune for us that the previous committees and Boards on this subject did not give the correct guidance so far as the interest of this province is concerned and furthermore the Imperial Council of Agricultural Research or the Imperial Institute of Sugar Technology have always dealt with the subject from an all-India stand point paying not only a scanty regard to

Bengal's interest as such, but often in direct prejudice to the interest of this province.

(2) *Provincialisation of Sugar Industry—an Imperative Necessity.*

Indeed an industry enjoying a heavy Tariff protection in a vast country like India, should not be restricted to a particular area,—specially when this area is less suitable or prospective than the other under-developed but more potential provinces like Bengal, Bombay and Madras. Indeed I am quite at one with the complaint, voiced on behalf of Bombay by Mr. V. G. Kale, the President of the Mahrastra Chamber of Commerce, pleading for the provincialism of the industry, and we in Bengal stand more firmly for this, specially because we have no hands in management or a good share in investment in the United Provinces or Bihar Sugar Mills, neither have any controlling voice in the Sugar Syndicate as Bombay has got.

(3) *Bengal a Large Consuming Province.*

Furthermore Bengal is a very large consuming market for the tune of about 40 to 50 lakh maunds of Sugar annually taking into account the neighbouring provinces of Assam and Orissa as well as the export to Burma and overseas.

(4) *A Fully Equipped Crop-Breeding and Soil Research Station with an Agrico-Technological Institute in Bengal.*

We in Bengal need imperatively a fully equipped cross-breeding and soil research station with an attached agrico-technological institute on the Java, Hawaii, or Mauritius lines to train people in scientific agriculture and economic large-scale utilisation of its products and by-products. Bengal is purely an agricultural province having got no other sources to fall upon, as Bihar and other provinces have got for instance mineral wealth, etc. It is strange irony of fate that such station or institutes have not been established or recommended for, in the province.

(5) *Bengal most Suitable to Strive for Highest Working Efficiency, in Fulfilment of the Conditions of Indian Fiscal Commission.*

When the Sugar protection was recommended by the Tariff Board in 1930, on the basis of fiscal commission's report, one of the pacific conditions had been that the Sugar industry in India as a result of protection, should strive for efficiency favourably comparable with Java, Hawaii, etc., so that within a measurable period of time, the protection can be wholly or partly done away with. Indeed if this condition originally specified by the Indian Fiscal Commission is to be fulfilled in India then Bengal is undoubtedly the most suitable province, from economic and potential points of view.

(6) *Provincialisation of Indian Industry.*

About the great crisis that the United Provinces and Bihar Sugar Mills are confronted with, I beg to submit that it is really a legacy of the indiscretion of the financiers who erected a great number of factories in a particular area where the working conditions are less favourable than elsewhere, without taking into account the local marketing possibilities, now that they have got over 6 lakhs of Tons in excess of the provincial requirements, for which United Provinces and Bihar require a permanent

market and Bengal and other under-developed provinces are going to be misled by a bogey of all-India overproduction. Indeed in this circumstances the provinces concerned should better localise the crisis and devise effective remedies themselves by adopting Rationalization which is the latest advance method of tackling with similar industrial crisis in other countries. Weaker, inefficient and uneconomic producing units should be eliminated in the best interest of the industry as a whole. Such factories should be dismantled and re-erected in a suitable Province in order to overcome the hard competition amongst themselves. And production should be consolidated in such efficient factories on the basis of the marketing outlet locally and outside. It is tragically unfair to deprive other undeveloped provinces from equitable benefits of a tariff protection or exploitation of those undeveloped markets, in the name of overproduction, in particular province which would practically serve to perpetuate the inefficiency of the inefficient factories in unsuitable localities and guarantee their prospect at the expense of the vast consuming masses outside including, as stated above, the people of the more potential but under-developed provinces. My idea is not to spread provincialism amongst the different provincial communities but to provincialise the industry for the sake of the local tillers, consumers, mill-owners as well as for the efficiency of the industry.

(7) No Statutory Restriction is Advisable for under-developed Provinces.

Regarding licensing or Zoning system, we do not advocate its introduction in Bengal at present in this infant stage, of the industry. Of course, it was admittedly a great necessity in United Provinces and Bihar when industry first developed there, as a result of the tariff protection in order to hold an effective break on indiscriminate erection of sugar factories. In Bengal capitalists are naturally shy and tragically apathetic towards business enterprises and in my opinion there is very little likelihood of a hectic tendency of large scale investment and erection of too many sugar factories in rivalry. To recommend such a statutory restriction now would mean the ruination of the prospect of the under-developed provinces like Bengal.

(8) Staff Efficiency in Sugar Industry.

Sugar manufacture is highly a technical affair requiring maximum of co-ordination between the different classes of employees engaged in the industry from the management down to the humblest factory hands. In countries like Hawaii, Java and Mauritius excellent conditions of services and working facilities have been introduced where each of the employees, especially the technical staff, works up in zealous spirit to show his individual highest skill or working result and thereby to ensure their personal prospects and earn better remuneration by way of bonus or increment, etc. In the Indian sugar industry the condition of services are most miserable with absolutely no stability or graded prospect whatsoever. As a matter of fact the employees have been made mere season birds. But in an industry enjoying a state protection, equitable benefits should be evenly distributed amongst all concerned including the consumers, the mill-owners, industrial employees and merchants, etc. It might not be out of place to refer the Board to the provisions of the Recovery Code "Jones Coastigans Act" of the United States where President Roosevelt statutorily enjoined on the sugar mill employers to be good employers in well-defined terms in order to be entitled to a Federal bounty for protection. A similar clause safeguarding the interest of the employees has been incorporated in the British sugar "Subsidy Act" as well. As a technical employee in the industry I have strong reasons to submit to the Board to include a similar clause in their final recommendation, for incorporation in the next amendment of the Sugar Industry (Protection) Act.

(4) *Note forwarded by Mr. J. K. Sen Gupta, Retired District Engineer, Dinajpur and Representative of Cane-growers, Bengal.*

In North Bengal there are only two big Vacuum Sugar Mills, one at Gopalpur and the other at Setabganj each consuming about 15 to 16 thousand maunds of sugarcane daily, and there are six or seven small Open-pan Sugar Mills each consuming 300 to 500 maunds daily on average. But the cane grown in North Bengal is much more than what these mills can consume. The millowners, therefore, fix up arbitrary prices for the canes very much to their advantage, and the poor cane-growers are obliged to sell their canes to their millowners even at a great loss. This will be clear from the fact that the price of cane has come down from 6 annas to 4 annas per maund in course of three years. So, it is very necessary that the minimum price of cane should at once be fixed up by the Government to save the interest of the cane-growers, and there ought not to be any distinction of price between a Vacuum-pan and an Open-pan Mill.

The cost of production of cane including harvesting is As. 3-6 (three annas and six pies per maund).

An analysis of actual expenditure, incurred in my Farm is given below :—

	Per Bigha (1½ acre).
	Rs. a.
(1) Rent per bigha	1 0
(2) Ploughing by tractor (once)	4 0
(3) Harrowing by tractor (twice)	2 0
(4) Trenching by tractor (once)	2 0
(5) Cuttings (seeds) 4,000 sets	8 0
(6) Carting	0 8
(7) Manuring including cost of manure (3 maunds castor cake and 1 maund sulphate of ammonia)	10 0
(8) Cost of planting	2 0
(9) Weeding and hoeing (twice)	3 0
(10) Cutting, stripping and collecting at 9 pies per maund	9 6
(11) Depreciation	1 0
(12) Supervision and watching	1 0
Total	43 14

The average yield per bigha (1½ acre) is 200 maunds. So, the actual cost of cultivation including harvesting is As. 3-6 per maund at the field.

I took figures from Bongaon Farm of Setabganj, Karnai Farm, Dinajpur and Bagda Farm, Rangpur. Their cost of production is even higher. Therefore, the cane-grower should be paid at least As. 5-3 per maund by the millowners as per details below :—

	As. p.
Cost of cane at the field	3 6
Carting to the weighbridge at 9 pies per maund	0 9
Loss on account of drriage, etc.	0 3
Profit of cane-grower at 9 pies per maund	0 9
At the weighbridge of the mill is	5 3 per md.

It is as much necessary to fix up the price of cane as to stop the arbitrary practices of the millowner. Otherwise, the fixing up of the price of cane will be of no practical value.

The following are briefly the arbitrary practices of the millowners:—

- (1) 1½ seer per maund is taken extra, which is termed by them as “Dhalta”.
- (2) An arbitrary quantity is deducted as “Bad Quality” almost in every case.
- (3) Weighment at the mill-gate being final, the cane-grower has to submit to it, although he finds that the deduction of 4 to 5 per cent. is invariably made from his actual weighed quantity.
- (4) The contracted quantity is not fully taken with the result that the balance of cane dries up in the field unsold and unused.
- (5) The price of the cane is not fixed at the time of contract, which begins generally two to three months before the actual crushing commences; only the total quantity of cane to be taken or supplied is mentioned in the contract. Price is fixed when crushing commences.
- (6) Prices of cane are not paid in full at the time of delivery. Afterwards, the cane-grower is obliged to submit to less payment. Sometimes, it is found that the millowner cannot clear up the price of cane and the grower is to patiently wait on their mercy. Complaints were received by the Sugar Association, Dinajpur, that after several months or so, the suppliers were paid at the rate of 9 (nine) annas per rupee, i.e., practically half the price and they were forced to give acknowledgment of full payment. Poor cultivator cannot go to court against the millowner as he has to depend entirely on them for his future crop.

There are some mills, although of limited concern, that have not got sufficient money to pay off the price of cane but without giving any hint to the supplier they begin to purchase canes. At first, they pay something but withhold their payment in the latter portion when the cane-grower has no other means of the disposal of canes. After the season is over, they sit tight and don't pay the remaining price. In our case, Messrs. Sharkara Pratisthan, Limited, did not pay anything in the latter portion and nearly Rs. 5,000 (five thousands) is lying unpaid since April last and no payment has been made from April to September notwithstanding repeated reminders.

My suggestions for the remedy of these arbitrary practices are given below:—

- (1) The “Dhalta” (1½ seer extra) system should be abolished.
- (2), (3) & (4) There should be an organised Society in each cane growing district to smooth the difficulties of both the cane-grower and sugar manufacturer. The District Magistrate should direct Government Officers under him as well as the member of the Association to inspect the weighment and to enquire of the complaints.
- (5) The price of the cane should be fixed by the Government.
- (6) The Government should be satisfied with the funds of the mill-owners that they are financially strong in clearing up the price of cane then and there and the District Magistrate should call for a report from the millowner at the beginning of the crushing season whether they have sufficient funds at their disposal to pay off the price of raw materials in cash.

Enclosure.

I have no idea of the cost of manufacture of sugar in the Vacuum-pan Sugar Mill, but I can give figures of two Open-pan factories from which it will be seen that these mills can safely pay for cane at As. 5-3 per maund

making a nett profit of nearly 30 per cent. even at this low market of sugar.

Open-pan of 300 maunds capacity.

	Rs. A.
Daily Expenditure—	
Price of sugarcane—300 maunds at As. 5-3 per maund	98 7
Cost of fuels, kerosine, etc.	3 11
Cost of labour and staff	7 12
Depreciation	2 0
Interest at 12 per cent.	5 0
	<hr/>
	116 14
Excise duty on 22 maunds of sugar at Re. 1 per cwt., i.e., As. 12 per maund	16 8
	<hr/>
	133 6
Income—	
Ontturn of sugar—22 maunds at Rs. 6-8 per maund	143 0
Molasses 25 maunds at Re. 1 per maund (this molasses has got good market)	25 0
	<hr/>
	168 0
<i>Less</i> Expenditure	133 6
	<hr/>
Nett Profit	34 10

Open-pan of 600 maunds capacity.

	Rs. A.
Daily Expenditure—	
Price of sugarcane—600 maunds at As. 5-3 per maund	196 14
Cost of fuel, kerosine, etc.	7 0
Cost of labour and staff	16 0
Depreciation	4 0
Interest at 12 per cent.	10 0
	<hr/>
	233 14
Excise duty on 45 maunds at 12 annas per maund	33 12
	<hr/>
	267 10
Income—	
Sugar 45 maunds at Rs. 6-8 per maund	292 8
Molasses 50 maunds at Re. 1 per maund	50 0
	<hr/>
	342 8
<i>Less</i> Expenditure	267 10
	<hr/>
Nett Income	74 14

(5) *Letter, dated the 4th September, 1937, from Shitla Prasad Saksena, Esq., M.A., B.Com., Lecturer in Economics, Lucknow University, Lucknow.*

I am enclosing herewith my note as a written evidence for your Board which please acknowledge. I shall be happy to appear before the Board if necessary.

Enclosure.

SUGAR INDUSTRY AND PROTECTION, BY SHITLA PRASAD SAKSENA, M.A., B.COM.,
LECTURER IN ECONOMICS, LUCKNOW UNIVERSITY.

The long overdue protection to sugar industry in India came for the first time in 1932 for a period of six years ending 31st March, 1938. Also, it was agreed upon to grant further protection for another eight years if the industry still needed support and for this purpose a fresh inquiry was to be made before 1938.

The industry has been getting an indirect protection to the extent of an additional 25 per cent. of the duty (which comes to Rs. 1-13) through the general revenue surcharge on all customs duties imposed in October, 1931. As against this, from April, 1934, there was an excise duty of Rs. 1-5 per cwt. on Indian sugar which has been raised to Rs. 2 per cwt. from 1st April, 1937, with a countervailing additional customs duty of Rs. 3 per cwt. on imported sugar. The net result has been the withdrawal of the indirect protection enjoyed from October, 1931.

During this period, due to keen internal competition and overproduction, prices of Indian factory sugar have sunk down from Rs. 9 to Rs. 6 per maund, while imported Java sugar is still sold at Rs. 9-8 per maund. This vast difference between the home manufactured sugar and Java sugar led a section of people in this country to think that the industry is over-protected. The newly appointed Sugar Tariff Board is inquiring into the matter and would shortly make recommendations to the Government of India in this respect before the duty is revised in March, 1938.

The question of the degree of protection to be allowed is to be considered from different points of view. The first consideration is the cost of production in Indian factories and its comparison to price, ex-duty, for imported sugar at the ports and in the inland centres.

The Tariff Board in 1931 calculated the manufacturing cost of sugar per maund in a typical Indian factory employing sulphitation process crushing 13 lakhs of maunds annually (per season) with a recovery of 9 per cent. cane at Rs. 8-3-1 per maund, without any allowance for the cost of molasses realised by the factories. In 1937, this has considerably been lowered. This reduction is due mostly to three causes (i) low price of cane, (ii) economies of large scale production, and (iii) manufacturing efficiency.

In 1931 the Tariff Board allowed annas eight per maund for the price of cane but during the six years of protection no factory ever paid more than five annas leaving out of account the abnormal years of 1933 and 1936 when the prices of cane ruled between three to four annas. In 1933 due to the absence of minimum price for cane the factory owners took advantage of their strong bargaining power and in 1936 the threat of the suspension of sugar production and the over-supply of cane made it necessary for the Government to officially reduce the cane prices. The maximum price now payable can be safely estimated at As. 4-6 a maund.

Secondly, the working capacity of a typical Indian sugar mill has increased from 400 tons as estimated by the Tariff Board to an average of 800 tons, the maximum crushing capacity being 2,000 tons a day. Economies of large scale production have reduced the manufacturing and overhead charges by about 62 per cent. The present charges being Re. 1 per

maund of sugar manufactured as compared to Rs. 2-10-3 estimated by the Tariff Board.

Lastly, due to an improvement in the manufacturing efficiency, the maximum recovery percentage has gone up from 10 in 1931-32 to 11.34 in 1935-36.

Rates for depreciation on building and machinery, interest on working capital and profit on capital investment remain practically the same. Improved and bigger machines with high crushing capacity and bigger buildings have increased the capital cost which instead of 13.5 lakhs (building 3.5 lakhs and machinery 10 lakhs) has gone up to 15 lakhs (building 4 lakhs and machinery 11 lakhs). Margin for depreciation and profits has thus increased. On the other hand, due to reduced cost of production working capital has decreased and there is a saving under this item.

During this period the cost of production of sugar has gone down even below the anticipated cost, as calculated by the Tariff Board, after the full protection period in 1946. The following table compares the cost of production in these years:—

	Cost of production in 1931.	Anticipated cost of production in 1946.	Present cost of production 1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Cost of cane	5 8 10	4 0 0	2 15 3
Manufacturing, Management and other charges	2 10 3	2 7 6	1 0 0
Depreciation: Building 2½ per cent., Machinery 5 per cent., Interest on working capital 7 per cent. and Profit 10 per cent.	1 13 4	1 11 8	0 15 9
Total	9 0 5	8 3 2	4 15 0
Deduct cost of molasses	0 10 8	0 6 9	0 1 0
Net cost of production	8 5 9	7 12 5	4 14 0
Add Excise duty . . . . .	...	...	1 8 0
			6 6 0

The income from the sale of molasses per maund of sugar manufactured in 1931 was As. 10-8 and it was estimated that by 1946 it would come down to As. 6-9. During this period, defying all estimates, the price for molasses fell between one to two annas per maund. At times, even this price was not available and the disposal of molasses became a problem for the factory owners. The present net cost of production comes to Rs. 4-14 per maund, i.e., 46 per cent. lower than the cost of production in 1931 and 37.3 per cent. below the anticipated cost of production in 1946.

Taking into account the increased excise duty of Rs. 1-8 a maund, the average ex-factory price of a maund of Indian factory sugar, at present, comes to Rs. 6-6. During the last sugar season the range of ex-factory prices for sugar produced in Indian factories, first crystal, per maund was between Rs. 5-4 and Rs. 6-12. The average between the maximum and the minimum, i.e., Rs. 6 may be taken to be the approximate normal price. It would thus appear that in spite of a phenomenal reduction in the cost of production between 1931 and 1937 the market prices for sugar fell even below this reduced cost of production and under these conditions the smaller and semi-efficient factories had to suspend production.

As huge quantities of cane were standing on the fields awaiting a very early crushing, the cane prices, in spite of the rules fixing the minimum price at a fixed ratio to the sugar prices, had to be lowered to As. 3-3 a maund and the Government and the Indian National Congress had to make an appeal to the sugar manufacturers to continue production. Thus the incidence of excise duty fell on the cultivators to the extent of Rs. 1-2-3 per maund of sugar manufactured or As. 1-9 per maund of cane sold, if the fair selling price for cane be taken to be annas five per maund. The advantage to the agriculturist through the increased production of cane crop or substitution of cane crop in place of less productive crops was thus lost. The large number of small and new factories came on the verge of closing down. The refineries and the khandsaris had no option but to disappear totally from the field of competition and to give up the industry.

Imports from Java.

Though there has been a marked fall in the imports of sugar and molasses in this country after the imposition of the protective duty they have not yet completely stopped. The following table shows the quantity and value of the imports of sugar and molasses in the post-war years and the years 1934-35 to 1936-37:—

	Quantity in thousand tons.	Value in lakhs of rupees.
Post-war average	517	19.71
1934-35	223	2.11
1935-36	201	1.91
1936-37	23	24

Of these imports more than 3rd come from Java and the major portion of these imports go to the provinces of Sind, Bengal and Bombay. In 1936-37, the shares of these provinces in the total import of 23 thousand tons, were 6.8, 6.3 and 5.3 thousand tons respectively. The explanation for the continuance of imports lies in two factors—the heavy internal cost of transport and the difference in the quality of sugar.

Even after allowing for the small reduction made recently by the railway companies in India on the transport of full wagon loads of sugar, the railway freight rate from inland distributing or production centres to the nearest port is about rupee one per maund which is more than 20 per cent. of the actual cost of sugar. Expenses of distribution and marketing account for another small charge. Adding these to the ex-factory price, inclusive of excise duty, the fair selling price for Indian sugar in the port towns and near about comes to Rs. 7-8 a maund.

In view of the superior quality of Java sugar which is available between Rs. 9 and Rs. 9-8 a maund in the port towns, the Indian sugar could not out the imported sugar at the present selling price. The question of reducing the duty, therefore, does not arise.

Development of new markets.

(i) *In the country.*—In the remote villages in India, factory sugar as yet cannot compete with indigenous raw sugar (gur) which is available between Re. 1 to Rs. 1-8 per maund. The difficulty of transport and distribution in this market is very great. The cane grown in the interior villages does not come to the sugar mills because of high cartage and the low price paid by the factories. It is actually economical for the cultivators to prepare gur out of such cane and to dispose it off locally for consumption purposes. The conservative section of Indian people living in the interior parts of the country does not touch factory sugar due to the old religious sentiment. This tendency, however, is fast declining. Looking at the pace of improvement in the rural transport there appears

to be a very little chance for the Indian factory sugar to capture this market within the country at least for a decade or so.

(ii) *Abroad*.—It is out of question under the present circumstances and without special preferences or contracts for Indian sugar to compete on equal terms in the neutral markets of the world. The export of Indian sugar to other countries, leaving transborder countries of Afghanistan, Nepal, Burma and Ceylon, is therefore, not practicable.

Handicapped from all sides, the sugar-factory-owners are trying to join hands in a common cause with a view to eliminate keen competition and force up the market prices. The Sugar Millowners' Association and the scheme of a Sugar Syndicate are steps in that direction. Keen competition usually leads to better understanding and co-operation and one should not be surprised to find, at an early date, the scheme of Sugar Control and Regulation of Prices advocated by the sponsors of sugar syndicate, materialised. The incidence of the sugar excise duty was partially passed on to the cane cultivators in the shape of reduced price for cane and now the balance may be shifted to the numerous consumers in the form of high prices if the syndicate scheme is really put into operation. The objection to a policy of protection, namely an exploitation of the consumers, which was so far not applicable to sugar industry may now come to the forefront.

The present position can be summed up as follows:—

- (a) Refineries and khandsaris have no chance of survival.
- (b) Small and new factories are on the verge of ruin.
- (c) Bigger and old factories in the United Provinces and Bihar cannot dispose off all their produce in the near about locality, where they have the freight advantage. In distant markets in other provinces and at port towns the high transport charges put them at a disadvantage in competing with new sugar factories started recently in those provinces and the imported Java sugar.
- (d) There is a scope for increased consumption of Indian sugar in the villages but the poor means of communication and transport, cost of distribution and competition with raw sugar (gur) do not promise great expansion.
- (e) The factory-owners are making an attempt to join hands and form a syndicate with a view to establish conditions of monopoly of supply in the country and then force up the prices.

Importance of the industry.

The industry has, during the period of a quinquennium attained such a position of importance in the national economy of the country that it cannot be left to its own fate. The industry has got to be helped and given a fair chance to develop on sound lines not only in the interest of the industrial capitalist and the Government revenues but for the sake of the unemployed youths, the consumers and the vast number of agriculturists. More than 30 crores of the Indian capital has already been invested in the country and its withdrawal or ruin would have serious repercussions on the economic life of the people in these days of depression and unemployment. A fair number of graduates and semi-educated men are getting employment in the industry along with about 100,000 industrial labourers in the sugar factories. The excise duty on sugar yielded an income of Rs. 2,56,04,000 to the Central Government during the two years 1934-35 and 1935-36 and it is probable that a revenue exceeding two crores of rupees per year (Government estimate for 1936-37 is Rs. 1,96,00,000) will accrue to the Government from the excise duty. The consumers, contrary to expectations, are getting sugar at a price much lower (Rs. 6 per maund instead of Rs. 10 per maund) than what they had to pay in pre-protection years. This is a rare instance of an industry where the consumers gain by getting cheaper goods instead of making a sacrifice consequent on a

policy of protection. Above all, the cultivators are the greatest gainers from the sugar industry. In the depression period when food crops were yielding a very low income sugarcane came to their rescue. It is the only important money crop upon which the cultivator in the United Provinces and Bihar depends. Sugarcane has occupied an indispensable position in the rotation of crops in the United Provinces. The total acreage under cane has risen from 3,076,000 in 1931-32 to 4,431,000 in 1936-37 (second forecast), an increase of more than 44 per cent. Of this area under cane 51.3 per cent. is in the United Provinces. The total production of sugarcane in 1936-37 was estimated at 70,170,000 tons and calculating at the rate of annas four per maund or Rs. 6.83 per ton, the total income to the agriculturist from this crop would come to about 48 crores of rupees in a year.

It therefore needs no more proof that the industry must be protected and the difficulties in its way should be removed. At the same time no one class should be given undue advantage over the other and the Government should adopt measures to safeguard all interests alike. There should be the fixed price for cane and in determining the minimum price the cost of cultivation of cane, quality of cane and normal profits to the cultivator should be the deciding factors and not the sugar prices. If due to a foolish policy of ruinous competition the sugar prices touch lower limits, the cultivator is in no way responsible for it and should not be penalised for the lack of foresight of the manufacturers. Again, if the Government wants to tax the monopoly profits of sugar-mill-owners, the burden, in the form of reduced cane prices, should not be allowed to pass on to the cultivators. In the United Provinces, the average cost of cultivation of cane is between annas two to annas two and pies six per maund. Adding the cartage which usually works at anna one per maund from fields within a radius of five miles from the factory and annas two per maund for distances above it, the cost of cane to the cultivator at the factory gate is about annas four a maund. Allowing one anna more for the risk, interest on capital and his family labour which is not included in the cost of cultivation, the minimum price for the average quality of cane should not be less than annas five per maund at the factory gate or at the weighbridge.

Based on the rate of annas five per maund of cane, the cost of production including 10 per cent. normal profits and Re. 1.8 excise duty would be Rs. 6.11-3 per maund of sugar manufactured and sugar prices in India, under normal conditions, should not be allowed to go above Rs. 6-12 a maund.

The problem of overproduction and keen competition between the factories now remains to be solved. At this stage, of the industry attempts to restrict output would not be very beneficial as it would raise cost of production per maund and the economies of large scale production may not be achieved. On the other hand, in the future interest of the industry, all efforts should be made to increase production and thereby reduce cost of production by increased crushing per day. Two remedies can be adopted for this, namely, (a) to increase the cost of by-product which may give some relief to the main product, and (b) to export the surplus sugar outside India.

The chief by-product, *viz.*, molasses are put to most wasteful and uneconomic use and realise about As. 1-6 per maund. It can be put to better use which may enable the manufacturers to earn more out of this by-product and to reduce the cost of production of sugar to that extent. The first use is to prepare power alcohol out of molasses and it is really strange that the Government has so far taken no steps in this direction though the matter is being pressed before the Government from the very next year of protection. Secondly, molasses can be used for surfacing the roads. Experiments made in this direction at Mandya in Mysore show that molasses can be utilised with benefit for such purpose. Even

the results so far obtained are sufficient to show the utility of molasses as a road surfacing material. Similar experiments have been conducted by Mr. H. N. Batham, Agricultural Chemist to the Government, United Provinces, with molasses as a road surfacing material and he reports satisfactory results. A patent application is pending for this, but it is understood, that the underlying principle consists in converting molasses into a solid material insoluble in water, by treating it with 5 per cent. lime at a temperature of 130° C. Dr. H. D. Sen of the Sugar Research Laboratory of the Harcourt Butler Technological Institute, Cawnpore, has also prepared an insoluble composition from molasses. A small piece of road treated with the composition has stood rains satisfactorily for about two and a half years. The slight defect still persisting consists in the composition becoming somewhat softened during summer. This is probably due to the fact that too much material was used for covering road. If the same procedure, as is adopted now for asphaltting roads, is adopted with molasses-asphalt composition, the cost of covering will be much reduced and the surface is likely to be more permanent. The experiments so far done in this direction are very inadequate and this avenue for the utilisation of molasses should be thoroughly investigated. The use of molasses for road surface can yield at least annas four per maund of molasses but if power alcohol is prepared the income from this source may appreciably increase.

The next important by-product is bagasse which is, at present, used as fuel. In this case also, there is scope for improvement and cardboard, inferior quality of paper and artificial silk can be manufactured out of bagasse.

Improvement in the quality of cane will help in increasing the output of sugar and thus reduce the cost.

In addition to these internal economies, the problem of transport needs immediate attention. This can be discussed under two heads:—(a) Transport from the field to factory, and (b) Transport from the factories to the distributing centres and the ports. At present, fifty per cent. of the price of cane is taken up by cartage and in certain cases the cost of transport is so prohibitive that the cultivator prefers to crush the cane in his village and prepare gur instead of sending it to the factory. For distances above five miles from the factory the cartage is annas two per maund of cane which is excessive. This high rate is due to bad village and district roads and lack of quick means of transport. The slow transport further causes a loss of sucrose content in the cane by getting it dried up in the sun during the course of transit. Improvement of existing village roads and opening of new ones is thus a matter of urgent necessity.

Railway freight rates from factories to inland distributing centres and to the ports are again excessive. From Gorakhpore, the centre of sugar production in the United Provinces to Cawnpore, the chief distributing centre, the wagon rates for transport of sugar are As. 8-11 per maund. From smaller railway stations away from Gorakhpore the rates are still higher. The maximum rate is annas twelve a maund. Between Cawnpore and the port towns the reduced wagon rates for sugar are as follows:—

From Cawnpore to	Rates per maund.	Percentage of cost of production.
	Rs. A. P.	
Calcutta	0 13 11	18
Bombay	1 8 4	31
Karachi	1 9 7	33
Madras	2 11 9	56

Such high transport charges should be immediately reduced if the industry is to stand competition successfully even with Java sugar at the ports. A

reduction may further be urged if Indian sugar is to seek foreign markets for the disposal of the surplus produce.

Syndicate Scheme and Government Control.

The last thing should be the organisation of marketing. It would avoid unnecessary waste of money in competition and in the duplication of distributive agencies. The establishment of a central marketing board or even sugar syndicate, as already contemplated, is no doubt necessary but it should not be purely an organisation of the millowners, as it is going to be under the present scheme of sugar syndicate, with a view to exploit the consumers. The Board should be controlled by the Government and should have representatives of the millowners, the agriculturists and the consumers. The syndicate should fix Rs. 6-8 as the price for the purchase of all sugar and should sell it to the consumers at Rs. 7-8 within the country. The excess production of sugar should be exported to trans-border countries of Afghanistan, Nepal, Burma and Ceylon by appreciably reducing the price and this loss in price may be met out of the sum of Rs. 4 crores* which would accrue to the sugar syndicate in the form of excess of internal sale price over purchase price. The Government should exempt sugar meant for export from paying the excise duty which would mean a further reduction in price by Rs. 1-8 per maund. The railways and shipping companies should be asked to give special reduced rates for sugar meant for export. It may thus be possible to sell sugar in other countries between Rs. 3 to Rs. 4 per maund for the present though in the near future after a better utilisation of molasses, improvement in the quality of cane and reduced transport charges the industry may be able to face competition without much help from the Government. Another overseas market may be the United Kingdom which is importing sugar from non-Empire countries and where India can have a right claim for preference in view of the present and past concessions in trade and commerce. A comprehensive scheme regulating the internal and external prices of sugar is urgently needed and this should come from the sugar syndicate under Government control (to guard against the selfish interest of the millowners). Germany and Japan did form such syndicates and kartels to protect and develop their home industries and even for capturing foreign markets and if India does the same she cannot be blamed for it.

The Government should consider the claims of sugar industry in the national interest and not purely from the point of view of state revenues or the interest of the capitalists only. A policy of *laisse faire* in trade and commerce is no more accepted by any country of the world including even England and such considerations should not be given any place in the interest of the country at large.

(6) Representation, dated the 24th April, 1937, by Rai Bahadur Kedar Nath Khetan, M.L.C., Padrauna, United Provinces.

Holding as I do the position of the Managing Director of four sugar factories situated in the United Provinces and Bihar and being keenly interested in the smooth and steady development of the sugar industry at large, and also having recently invested a large amount of capital in the jute industry which is largely dependent on the above, may I have the privilege of submitting for your kind perusal and consideration the following representation wherein I have endeavoured to give expression to my view regarding the present need for protection to the sugar industry, the necessity of Government organising and fostering it in its own interest as well as in the interest of the country, and the desirability of keeping intact the confidence reposed in Government by the Indian Commercial Community?

* Estimated on the basis of 1,050,000 tons consumption of sugar in India per year.

The protection granted to the sugar industry in April, 1932, was based on the following grounds:—

- (a) To provide for the fostering, development and stabilization of the sugar industry with a view to render the country self-supporting in her sugar requirements in due course.
- (b) To relieve rural distress by enabling the agriculturists to have a crop that would be readily marketable.

The industry was granted protection amounting to Rs. 7-4 per cwt. besides a 25 per cent. revenue surcharge, which raised the effective protection to Rs. 9-1 per cwt. It is highly satisfactory to note that although Indian capital is regarded as being too shy and conservative, yet in circumstances reasonably favourable and backed by assurances solemnly given by Government, it comes out as liberally and plentifully as it does in any other part of the world. With this high incidence of protection the development has been so rapid and phenomenal that within a period of about five years only, the country is now absolutely self-supporting so far as the figures of her production and consumption of sugar are concerned. This is evident from the following facts:—

Production of sugar direct from cane in 1931-32 was 478,000 tons.

Estimated production of sugar direct from cane in 1936-37 is 1,031,000 tons.

Calculated requirement of sugar for all provinces in India is 900,000 tons only.

This rapid development, however, has led to the investment by the public of some 30 crores of rupees, resulting in the establishment of about 150 sugar factories in the different parts of the country, there being only 32 factories before protection was granted. The object for which protection was granted has thus been partly fulfilled, and the public has done its duty. But this is hardly all. In spite of the phenomenal success it has achieved, the industry is now passing through a grave crisis, which, if not averted, might destroy it to the utter grief of the country, the producers, the consumers and the poor agriculturists. It is beyond the power of all the three latter to help it, but Government of course can save it. The troubles from which the industry now suffers may be enumerated as follows:—

- (a) Factory sugar production has exceeded the capacity of consumption.
- (b) Foreign sugar is still being imported adding to the stock of sugar already lying undisposed of in the country.
- (c) Lack of a sugar marketing organisation, the absence of which is leading factories to a cut-throat competition, which amounts to a suicidal action in most cases.
- (d) Lack of harmony and stability between the real interests of the growers of cane, the manufacturers of sugar and the consumers.
- (e) Lack of efficiency in cane cultivation on the fields and the necessity of better and more efficient control over the working of the sugar factories.

It would thus be clear from the above that in spite of the rapid and satisfactory development, the fate of the industry is very uncertain, and unless it is properly organised and stability secured, the very aim and object for which protection was granted would be defeated. The developed industry, paradoxical though it may sound, is still an infant one and needs greater care and protection than was actually promised to it in the beginning. Since production has already exceeded the limits of consumption, it is essential in the interest of the infant industry to stop the imports of any further sugar from foreign countries either by imposing an arbitrary prohibitive tariff against it or by increasing the import duty to be

determined on the basis adopted by the Tariff Board in 1932 (*vide* Tariff Board Report, page 69, paragraph 64) as follows:—

	At commence- ment of pro- tective period.	At end of protective period.	Actual as at April 1937.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Fair price for sugar . . .	9 5 9	7 12 5	5 0 0
Of which cost of cane . . .	5 8 10	4 0 0	3 5 9
	<hr/>	<hr/>	<hr/>
	3 12 11	3 12 5	2 10 3
Add back value of molasses . .	0 10 8	0 6 9	...
	<hr/>	<hr/>	<hr/>
Balance to represent Manufac- turing cost, overhead charges and 10 per cent. profit on capital invested . .	4 7 7	4 3 2	2 10 3
	<hr/>	<hr/>	<hr/>

The figures shown in the last column represent the average market value ex-factory of Indian factory sugar in April, 1937, and the average cost of cane per maund sugar at As. 5 with extraction at 9·3 per cent. This refers generally to the factories situated in Gorakhpur district. Out of this value further should be deducted the sum of Rs. 1·7-9 per maund charged by way of an excise duty by Government thus leaving Rs. 1·2-6 only for the manufacturer to cover the manufacturing cost (Rs. 2·7-6), overhead charges (As. 10) and profit (Rs. 1·1-8) per maund as estimated to be reasonable by the Tariff Board. It is thus evident that in spite of the apparently high protection duty the return to the factories at present is not only *nil*, but the factories are running definitely at a loss of about Rs. 2 per maund, which, if not stopped at once, is bound to ruin the industry. The Tariff Board in 1932 had considered that at the end of the period of protection, factories should after paying for their cane, have Rs. 4·3-2 per maund of sugar to cover the charges stated above, but the state of affairs even after a period of five years only has altogether a different tale to tell, as revealed above.

Nor is this all. The net price of Rs. 4·3-2 per maund of sugar suggested by the Tariff Board to be fair and reasonable was done at a time when the sugar factories in India were producing only a small percentage of the total quantity required for consumption in the country and hence the sugar produced in the United Provinces and Bihar, where most of the sugar factories are situated, could be disposed of in the neighbouring areas. The advantage of the railway freight from the ports to the inland markets was in favour of the Indian factories as compared with imported sugar and the selling price of sugar f.o.r. factory at that time was determined by the price of imported sugar at the ports *plus* railway freight to such inland market as the two had to compete at. But the position is completely reversed now. The factories working in the United Provinces and Bihar now number about 104 out of a total of about 150 in the whole of India and produce about 85 per cent. of the quantity of sugar produced in the country. As it is impossible for this large quantity of sugar to continue to be consumed as before, the factories in these two provinces are compelled to sell their sugar in the most distant markets and have to compete directly with imported sugar at the ports, now giving the advantage of railway freight to the latter with the result that the prices f.o.r. factory are governed by prices of the imported sugar at the most distant ports *minus* railway freight to such port from the factory.

To make the position still worse, Java has been steadily reducing the c.i.f. price of its sugar to keep the Indian sugar away from the ports. The c.i.f. price of foreign sugar which was taken by the Tariff Board in

1932 as the basis for formulating the proposals of protection was Rs. 4 per maund but the price for the last two years has been ranging between Rs. 2-6 and Rs. 3 per maund only.

From the facts stated above, it is evident that if the Indian industry is to be preserved, the present import duty on all foreign sugars should be increased by at least Rs. 5-6-8 per maund as follows, the effective import duty thus coming up to Rs. 14-8-6 per cwt. only:—

Rs. 1-8-11 being the difference between the reasonable price recommended by the Tariff Board at the end of protection period and the price actually obtained at present.

Rs. 1-7-9 being the amount of excise duty imposed by Government and not anticipated by Tariff Board.

Rs. 1-2 being railway freight from factory up to most distant ports.

Rs. 1-4 being the difference between the c.i.f. price of Java sugar taken by the Tariff Board as the basis of its proposals and the price actually prevailing at present.

But this alone will hardly solve the problem. So long as the problem of balancing the capacity of production and consumption of sugar is not boldly faced, so long as the financially weak, though not necessarily inefficient, producers are not properly supported, and so long as efficiency is not insisted upon in everything connected with it the fate of the industry as well as of those dependent upon it must continue to be very shaky and uncertain. In fact the failure of this second largest industry and the consequent ruin of many a capitalist along with it, will kill all spirit of enterprise in many an Indian besides shaking confidence in the promises made by Government. As these are problems that are incapable of solution without Government intervention, I humbly suggest the following steps for the consideration of the Board while making recommendations to Government:—

- (1) No more of sugar plants should now be allowed to be installed in any part of the country, nor should the capacity of the existing factories allowed to be extended.
- (2) Facilities for export of sugar produced in excess of the actual requirements of the country should be sought for and obtained.
- (3) A sugar marketing organisation on the lines of NIVAS, the organisation in Java, should be brought into existence to obviate all chances of suicidal competition, fixing the minimum price of sugar and supporting the financially weak members of the industry.
- (4) Intensive cultivation of land with improved varieties of sugarcane and more efficient work in the factories. The yield of cane per acre in Java is 40 tons, while in India it is about 15 only. The percentage recovery of sugar in Java is about 13, while in India it is 9 only.
- (5) Facilities should be provided for the utilization of molasses, the most important by-product of the industry by permitting the manufacture of power alcohol.

These steps together with the increase in the import duty suggested above, I believe, will lead to the healthy development and stabilization of the sugar industry, which has justified the protection granted to it not only on account of its having achieved what was expected of it, but also on account of having rendered invaluable help to Government by easing the agrarian situation at a period of acute economic depression, by relieving the severity of the unemployment problem and by enabling the peasants to clear off their Government dues with the help of their ready money crop. The question of the loss of revenue from import duty, therefore, should not deter Government from doing its duty by the industry, for it

is of a nature more fictitious than real. This is evident from the fact that the loss of revenue to be sustained by Government, is made up by incomes from different sources as follows directly and indirectly as a result of protection granted to the industry:—

- (a) Increased income-tax and super-tax not only from factories but also from the staff and from other domestic trades supplying materials to the industry.
- (b) Increased customs duty on sugar machinery.
- (c) Increased revenue to Indian Railways from increase of sugar and sugarcane traffic.
- (d) Facility in realizing its dues from the peasantry.
- (e) Income from the excise duty imposed on the industry.

Holding the views, Sir, as expressed above I humbly submit that in order to stabilize the developed but infant industry of sugar, an increase in the Tariff duty together with the other steps for consolidating it are necessary. The huge capital of about 30 crores of rupees has been invested in the industry only under the assurance of reasonable protection from the Government and now when the industry as well as those dependent upon it are threatened with sure destruction if timely support is not forthcoming, it is for the Government to come to their rescue by increasing the import duty to a level that will enable the industry to survive. I humbly submit further that in case the Government does its duty, it will go a long way to reassure the Indian Commercial Community and to restore its trust and confidence in the promises solemnly made by the Government of the country.

(7) Letter, dated the 23rd June, 1937, from Mr. Ajodhya Das, M.B.E., Barrister-at-Law, Gorakhpore, United Provinces.

ENQUIRY INTO SUGAR INDUSTRY.

With reference to your Questionnaire issued to me for the above, I beg to inform you that I am a Director of the Ratna Sugar Mills Co., Ltd., Jaunpur, and have been informed by the Managing Agents that they have already sent you replies to all the questions which generally concern them. As regards Item Nos. 15, 20, 21, 37, 48, 49, 51 and 52, to which they have not replied, I attach hereto my own views in respect thereof as the Secretary of the Cane-growers' Association, Gorakhpur.

15. I cannot offer any figures.

20. The average cost of the cultivation excluding the cost of labour to a cultivator who does labour himself with the help of his family members is not less than 2 annas 6 pies to 3 annas per bigha and in this district an acre is equal to a bigha and half and therefore the cost per acre will come to As. 3-9 or 4½ per acre, over and above the cost of actual cultivation the cultivator has to pay one anna for an average distance of 5 miles per maund for the cost of carting and over and above this he had to incur the cost of waiting. Since this year over 2 per cent. of the cane was not taken up by any factory, the cultivator has to suffer a further loss with the result that this year the area under cultivation had been reduced by nearly 30 per cent. The yield per acre is about 400 maunds per acre of the improved variety of the cane.

21. The main difficulty of the cane-grower are as follows:—

- (1) The under-weightment of the cane. In most European manufactures and some well Indian manufactures there is very little complaint, but in many other factories this complaint is in a periodical one and in spite of the best effort of the local Cane Officer this complaint does not cease. The only proper and effective remedy which I can suggest is, that at each purchasing

centre the Government should provide its own weighbridges and the cultivator should have the option of getting his cane weighed on payment of one pice per cart and a purcha can be given to him of his correct weight which he can verify by the factory purcha.

- (2) The other of the complaint is long waiting of carts at the factory gate and the weighing centres. This is a great source of trouble and it is in my experience that the cartmen are made to wait from 48 to 56 hours. This can only be remedied by issuing proper passes and fixing a zone area for each factory.
- (3) The delay in payment of prices. This can only be done by the factories making the payment promptly.
- (4) There are not suitable approaches to the factory gate or the different weighing centres. A portion of the excise duty or the motor tax fund should be utilised for this purpose and the factory owners should contribute something towards it and it should be made compulsory on them to supply suitable approaches and proper roads up to a distance of about a mile at least from the factory gate and the various weighing centres.

37. Considerable deterioration of the cane does take place owing to no fault of the grower and because he had to wait from 48 to 56 hours and in the end his cane is rejected or a very low price offered, because the poor cultivator cannot take back his cane after carting it for over 5 miles or more and after waiting for 2 days with the result that he is forced to accept any price.

48. In my opinion the present low price of sugar is entirely due to internal competition among the various factory-owners and is not due to the increase of excise duty. In this matter the cultivator had no hand and no basis of minimum price of cane can be satisfactory unless it takes into account the cost of cultivation. In my opinion the minimum price of cane should never be below 4 annas per maund.

49. I am not in favour of bonus payments as it will never reach the hands of the cultivator and it will depend entirely on the factory and there would be so many middle men between the factory-owner and the cane-grower.

51. I do not think in this part of the district it is possible to extend the crushing season. In May the cane gets too ripe and the yield of sucrose is also reduced.

52. I think the Imperial Council of Agricultural Research is doing useful work.

(8) *Extract from letter, dated the 22nd August, 1937, from Mr. Har Sahai Gupta, Sunker Agricultural Farms, Bilari, United Provinces.*

I am enclosing herewith a list of the malpractices complained of and detected. They very much tell upon the conditions of the grower. The grower finds himself helpless and in many cases has to tolerate what he cannot avoid and does not find sufficient ready help to avoid.

Enclosure.

SOME OF THE MALPRACTICES COMPLAINED OF AND DETECTED.

Weighment.

1. (a) Deliberate recording of lower gross weights.
- (b) Deliberate recording of higher tare weights of carts. These methods were adopted at a large number of purchasing centres and have been generally complained of.

(c) Deliberate stopping of weights for sometime in the day. The consequent congestion in the afternoon and the anxiety of the grower to sell quickly in order to avoid getting home late were taken advantage of to record false weights. Growers sometimes knew that this was being done but were afraid that their cane would not be taken if they complained.

(d) Deliberate poor lighting arrangements for night weighing so that the weighbridge scale was in the dark. This facilitated the recording of wrong weights.

(e) Taking an assumed weight for a cart known generally to bring cane. This was openly done.

(f) Purchase by appraisement, i.e., without actual weight, particularly at places where a beam scale is used.

(g) Unloading some of the cane on a cart before weighing.

(h) Incorrect fixing of beam scales and manipulation of weighbridges.

(i) Keeping carts waiting for days.

Unauthorised deductions and contributions.

2. (a) Purchasing agents in some places made growers agree to accept the price of say 70 maunds for every 100 maunds supplied.

(b) Taking something from each grower as contribution to charity or for religious purposes.

(c) Making the grower pay brokerage for changing rupees into small changes.

(d) Closing purchasing centres and making growers send cane by rail at their own expense.

Unauthorised sale of requisition slips for cane.

3. There have been numerous instances of this kind of complaints.

Imposition of pressure on growers by indirect methods.

4. Besides the above there are (1) malpractices by middle men, e.g., purchase of growers standing cane in the fields, sale by Zamindars and money-lenders of growers cane as their own in order to realise their dues, sale of passes by middlemen to growers, removing some cane from each loaded cart on some pretext, acceptance of secret consideration for weighing; (2) malpractices at factory gates, which are much the same as have been described in (1), (2), (3) and (4) above.

(9) Letter, dated the 20th September, 1937, from Mr. Raghubar Dayal Gupta, Cane-grower, Etah, United Provinces.

On the 4th instant, while you were at Cawnpore, I had been granted an interview with you, and during that interview I had an honour to say a bit in regard to the sugarcane. But at that occasion I had not prepared the written statement to lay down before you. Now, I am enclosing herewith the statement of my views regarding the fixation of sugarcane rate and request for your kind perusal and regards.

Enclosure.

With reference to the fixation of rate for the sugarcane I have a few words to state. During the period of the last thirty years, I have noticed that the average price of the Java sugar on the ports of India, has never been less than Rs. 10 per maund. Even in these days, the foreign sugar costs us about Rs. 11-4 at the ports and Rs. 12-8 in the interior of the

country. Reviewing the above statement, I beg to represent to the Government that the rate for Indian sugarcane be fixed at about annas ten per maund, and in this way the Indian sugar can attain fair price level. By fixing the rate of cane at annas ten per maund, the cost of production for one maund of sugar comes approximately to Rs. 9. And the selling price of one maund of sugar can be easily raised to Rs. 9-8 having the margin of annas eight per maund profit to the manufacturer. The price of sugar at ports such as Calcutta would be Rs. 10-2 to Rs. 10-4 according to the railway freight rates; and at Bombay, Karachi, Madras and Rangoon would be Rs. 10-8. Comparing these prices with that of Java sugar, Indian sugar can be had easily by annas twelve to rupee one cheaper at port areas. And in the interior of the country, it would be cheaper by Rs. 2 to Rs. 2-8. Moreover this fair price of sugar would serve as an impetus to the consumption of gur.

Some people are of opinion that the high rate of the sugarcane would be the cause of increasing sugarcane cultivation and the erection of the new factories in the other parts of India. I do not agree with this opinion of theirs. There seems to be no possibility of either in the increase of cultivation of cane or the erection of the mills this year. The reason being that the cane is sown in February and harvested in December, while for raising up a mill it requires more than a year. So there is no such case as to increase the production of sugar, for the next season. It is also said that the high price of the sugar would induce the Indian States to start new factories. This can be checked if we appeal to them to consider the cause of India as a whole and let not the increase sugar production in their states. In case if they do not accede to this then the excise duty on quantity of sugar imported in their states should be given to them instead to the Indian Government. Thus they will not enlarge the sugar industries in their states.

The average cost of production for one maund of sugarcane comes to about annas six (annas four and half spent on land, pies six in clearing and harvesting, etc., and an anna on the expenses of carriage from the field to the gate of the factory). For the certainty of cost at this rate I may refer to the records of the Government and of big landlords. Sometimes the cost of production is rather more, because the crop is victim to scanty rain, untimely rain and overflow of water and also prevalence of pestilence. These are the chief causes of the present indeteness. Now the only means of giving relief to the agriculturists is to fix the rate of sugarcane about annas ten per maund. Out of this rate, if the Government wishes, it can withhold annas two per maund for raising of agriculture relief fund and allotting annas eight to the cultivators. These annas two per maund will give the Government of the United Provinces and Bihar about rupees four crores yearly (three crores to the United Provinces Government and one crore to Bihar Government), which amount can be spent in giving relief to the peasants.

The farms for cane experiments should be set apart to instruct the cultivators to exert in the intensive and the improved forms of cultivation, rather than extensive cultivation so as that one acre of land should produce 500 maunds instead of 300 maunds.

For the betterment of the cultivators exemption of loans is not so much beneficial as is increasing their capacity of earnings by raising the rate of cane to annas ten per maund. Most of the cane is grown in the provinces of the United Provinces and Bihar where there is Congress Ministry. And the chief aim of the Congress is to better the conditions of the peasants whose miseries are heart-rending. So this is the best opportunity for the Provincial Government to prosper the agriculturists while fixing the rate at about annas ten per maund, if not for ever at least for the coming season 1937-38. It should be remembered that upon the well-being of the agriculturists, depends the prosperity of the whole India.

For the development of the sugar industry the consumer's attitude should be also patriotic, and the Government's beneficial. Charity begins at home; and we see that every nation prefer the products of its own country to the products of other countries though the latter be cheaper. And the Government should remove all restrictions for exporting the sugar of our land. India, does expect this favour from its people and the Government. The sugar excise duty is collected in the first instance from the manufacturer, but the poor peasant too is under its burden, for the price of sugarcane is much lowered.

It should be pointed out that out of the whole product of the cane 24 per cent. is used in the manufacture of sugar and 76 per cent. in the gur production. If the price of cane and sugar be favourable, the demand for the gur would be brisk and also its price too shall be fair.

In the end I may suggest that the formation of the cane-growers unions is quite essential for the sake of organisation and protection of their rights. The early formation of these is the need of the time.

(1Q) *Letter, dated the 26th June, 1937, from Mr. Jagjiwan Ujamshi Mulji, Bombay.*

Being a sugar merchant, I often come into contact with factories of the United Provinces and Bihar. I had heard many reports of horrible condition of labour and depressing condition of cane farmers. I also knew that labour or cane-growers unions do not exist in sugar industry. Then with a view to be useful to the poor, I approached Mr. Joshi, M.L.A., a veteran labour leader and a social worker to recommend some respectable gentleman in the United Provinces who will send me a report of the labour and cane-growers' condition in the United Provinces and Bihar. The time was too short, therefore enquiries only could be made in the Eastern United Provinces. Now I am sending herewith three copies of a report received by me for the Board's information and recommendation.

From the report it looks very clear that minimum wages of skilled and unskilled labour is most essential. Also strict measures to protect cane-growers of the United Provinces and Bihar are necessary.

Enclosure.

SURVEY OF LABOUR CONDITIONS IN SUGAR FACTORIES IN THE EASTERN UNITED PROVINCES.

Limits of the Survey.

There are 27 sugar factories in the Eastern United Provinces. Of these 23 are situated on the District of Gorakhpore and 4 in the District of Basti. These 27 factories produce about 60 lakh maunds of sugar every year which is nearly one-fourth of the total quantity produced in the whole of India.

The 23 factories in the Gorakhpore District crushed 519 lakh maunds of cane in the 1935-36 season and 579 lakh maunds of cane in the 1936-37 season. An attempt has been made here to collect statistics for all these factories but complete statistics of all have not been available so far. Of the 27 factories it has been possible to visit only 23 and though some information has been secured about each of them, still complete figures could be obtained only for 10 of them.

An average factory crushed about 600 tons of cane per day and employs about a thousand workers. In the off season only about 250 men are detained. The biggest factory in the Eastern United Provinces is the Sarya Sugar Factory in Sardar Nagar, which crushed about 2,000 tons of cane every day. We could not get figures for this factory in time to incorporate them in this preliminary survey. The biggest and the most

efficient combine in this industry is Begg Sutherland & Co., Ltd. We have not been able to secure exact statistics from them so far. But the general observations made in this note are applicable to all factories.

Total Strength of Labour.

The total strength of labour employed in these factories is about 30,000 men. Of these some 6,000 are employed all the year round and the remaining 24,000 only in the working season, December to May. They are therefore idle in the remaining six months except some who take to Agricultural operations during this time. This huge labour is altogether unorganised, mainly because the industry has only recently developed. But the conditions of labour are deteriorating from year to year for the last four years. When new factories were being erected every year, there was a large demand for fresh labour of all kinds and considerate treatment had to be guaranteed to secure it. But now when the industry has reached its maximum limit of expansion in these parts, labour of all kinds is fairly abundant and consequently wages have gone down and the treatment has also become much harsher. It is therefore high time for the organisation of a strong labour union covering all the factories in the Eastern United Provinces. This note brings to light some of the most urgent needs of labour in sugar factories.

Trade Union and its Recognition by Employers.

A strong trade union working for the benefit of the labourers should be welcomed by most employers. In fact, some of the managers and factory-owners who were visited during the course of this survey themselves suggested that some responsible workers should undertake the task of organising the labourers in sugar factories. They pointed out that some factory-owners treated their workers very badly and brought disgrace to their whole community. It is to be hoped that factory-owners will welcome the formation of such union. The nucleus of such a union has already been formed during the course of this survey. But the problem of organising labour scattered over large distances is a difficult one and it will take a little time before it becomes a vigorous organisation.

Labour settled or migratory.

A major portion of labour employed by these sugar factories is generally drawn from the neighbouring villages but the outside element is not small. Sometimes it has been observed that labour moves with the Chief Engineer and the Chief Chemist. Their whole shifts have been observed to accompany them where they go. Where such migration has taken place, a large outside element is found among the factory workers. Otherwise turnover in the efficiently managed mills is small. These mills sometimes pay retaining pay to their labourers so that they may return in the working season. Other factories offer other attractions such as increased bonus, etc. But some factories which are inefficiently managed treat their labour very badly and do not hesitate in dismissing workers at their whim for very small mistakes. In such mills turnover is large and their efficiency gets impaired.

Recruitment, Fines and Dismissals.

Some five years back when new factories were springing up with incredible rapidity, recruitment was made directly by the Manager, Engineer or Chemist and very good treatment was given to the recruited labour. Now when labour is in abundance, casual vacancies are filled up at the suggestion of mistries, shift engineers and shift chemists and jobbery is often found to be prevalent. But more important than this is the effect of recommendations. Most of the new vacancies go to those who can bring strong recommendations.

Fines are sometimes necessary to maintain discipline. Unfortunately some factories abuse this power and cause hardship to their employees by unjust impositions which are often very heavy for their small pay. The dismissals, too, are sometimes most capricious. There is no procedure enabling the turned-out labourers to defend their actions before superior officers who sometimes put their seal of approval on the recommendations of their subordinates without giving the victims any opportunity to defend themselves.

Hours of Work, Leave rules and Holidays.

Hours of work are fixed by the Factory Act. But complaints have been made to me in some factories that the actual hours of work are greater. Usually, in the working season there are three shifts of 8 hours each. Generally there is a fourth shift also known as the day shift which works throughout the year. This shift works for ten hours a day and generally get a weekly holiday. It thus puts in 60 hours work every week. The other three shifts in the season are each of eight hours duration. Their spread-over is generally arranged as follows:—

2 A.M. to 10 A.M., 10 A.M. to 6 P.M., 6 P.M. to 2 A.M.
The arrangement often changes in different mills.

Begar from shift workers after duty.

There is a complaint in certain factories that labourers after doing their full work during a shift are put to begar, such as unloading or loading of wagons, putting cane in the cane carrier, etc. This sort of begar is generally taken from coolies who get small wages than rupees ten per month.

Only two shifts of 12 hours each.

There is also a general complaint from the skilled labour that in their case there are in practice only two shifts of 12 hours each. The shift and manufacturing chemists, penman, juice supervisors and certain clerks are the loudest in such complaints. These people are not paid any overtime for such additional amount of work taken.

Inefficiency of Factory Inspection.

It is a pity that some unscrupulous manufacturers should adopt such blood-sucking practices. To work for even eight hours a day without any holiday for months together is by itself a most objectionable practice. There is no reason why the factories should not give a weekly holiday. One factory, at Gauri Bazar, belonging to the Begg Sutherland & Co., Ltd., I was informed by its manager, is closed once every week to allow the much needed recreation, to its workers and also to repair the machinery. It is evident that this practice wherever adopted must result in greater efficiency and be also cheaper in the long run as it must lengthen the life and efficiency of the machinery. And if some employers force their labour to work for 12 hours a day at a stretch and that for months together without any break or holiday, the consequence of such practice upon the health of the employees must be disastrous. It is a pity that factory inspection is so inefficient that such practices still continue to exist in certain factories. I would not say that this happens with the connivance of the Inspectors but there is no doubt that the practices are in vogue in certain factories and the fact that they have not been put to a stop to so far, is a serious slur on the efficiency of the factory inspection staff.

60 hours work during a week.

The D shift which works for 60 hours per week should also reduce its hours of work to the fixed maximum of 56 hours. It is strange that the

practice of taking 60 hours work per week should be so common to almost all factories. So far as I am aware it is against the rules.

Enlightened factory-owners.

It would not be fair to some of the more enlightened factories if I closed this section with these general remarks only. There are factories which realise that cheerful efficient labour brings in larger returns than overworked and discontented labour. These factories observe the factory rules strictly. They give holidays on important Hindu and Muslim festivals and have got fixed leave rules. If a labourer does not avail himself of the leave permitted, he is given additional wages for having worked during leave days. These periods of casual leave on full pay vary from 5 days to 45 days in the different factories and for different classes of labour. Besides this leave without pay is permitted in times of need to most workers up to a reasonable limit.

Duty of protected industries.

But the existence of a few efficient and enlightened factories cannot excuse the defaulting ones. Rather they set the example for others to follow. In the case of protected industry, the responsibilities of factory-owners are very great and their whole claim to protection depends on the consideration which they show to other national interests concerned with the industry. It is therefore to be hoped that such blood-sucking practices against labour will be stopped forthwith. The Government must also provide for strong and severe penalties upon the defaulters wherever such practices are detected. Factory inspection must be made more efficient and the inspector must be made answerable for failing to detect the existence of such practices in factories.

Wages.

The question of wages is the most important question in any industry. The scale of wages is generally the index of the profits and prosperity of an industry. But one is surprised to find that although during the protection period of the last seven years the factories have earned huge profits, the wages of labourers in them, both skilled and unskilled are the lowest known in any industry. The comparative charts showing the minimum, maximum, and average wages of skilled and unskilled workmen and the clerical and superior staff given in Appendix A* speak for themselves. These wages were very kindly supplied to me by some factory managers, who represent the more enlightened concerns and honestly believe that wages prevailing in their factories are adequate. Some factories, which seem to have a lot to hide, refused to supply me with exact figures from their books. The wages used in the calculation of these charges therefore represent the highest prevailing anywhere in the industry in the Eastern United Provinces. These charts show that wages of unskilled labour go as far below as four rupees per month. The average wage of unskilled labour will not be found to be more than Rs. 6 per month, as majority of these men get Rs. 5 per month and only a comparatively small number Rs. 7 or Rs. 8 per month.

Again one is ashamed to find an assistant cashier and an assistant Time-keeper working on Rs. 8 per month, a *chini munshi*, i.e., sugar clerk and an assistant store-keeper on Rs. 15 per month, in the first class central sugar factory. Similarly in skilled labour these charts show that in some factories khalasis get Rs. 7 per month. Engine drivers and electrical apprentices get Rs. 10 per month, Tendals and blacksmiths get Rs. 11 per month, Fitters get Rs. 14 per month, Electrician get Rs. 15

* Not printed.

per month and moulders get Rs. 16 per month. This is a disgraceful state of affairs and must be put an end to immediately. Minimum wages of these unskilled and skilled labourers must be fixed by statute and any factory that engages labour on lower wages must be dealt with severely. While I was making investigations about wages of coolies of a certain factory, the station master who has to transport cane and sugar for the factory told me most pathetically that wages paid to labour loading and unloading cane and sugar bags in wagons were as low as nine pice per day of ten to eleven hours. He complained that owing to this inefficient labour, the work of the railway suffered a lot for these starving coolies sometimes got exhausted and took one and half-times the normal time to unload or load a wagon. The short sightedness of some employers does not see that it does not pay to starve labour, for their inefficiency recoils ultimately on their own head. A very interesting story was told to me by an accountant in one of the factories. One big Indian Industrialist visited the workshop one day and saw the firemen at work. On asking their wages, he was told that they earned a rupee per day. He went into a rage and said that when labourers could be obtained on two annas a day, it was a colossal waste of money to pay a rupee per day to the fireman. His orders were therefore carried out and the firemen were replaced by strong unskilled but intelligent labour on four annas per day. They did not know the art of a fireman and burnt much more fuel than by the skilled fireman who had been dismissed and the steam produced by them never gave the required pressure. After a few days' trial, the results were brought to the notice of the proprietor who had dismissed the fireman and he was ashamed at his folly and called back the fireman who had been dismissed. The incident is a typical one and shows the mentality of our industrialists. They do not see that a higher paid labour is the more efficient labour and always pays in the long run. Then they do not see that small economies in wages cause heart-burning and result in greater loss to the factory. It is the proverbial pennywise and pound foolish policy.

It is really sad to see the plight of our educated classes who work in these factories. We have seen Assistant Cashiers and Assistant Time-keepers getting Rs. 8 per month and Electrical apprentices Rs. 10 per month. The educated classes are sometimes employed at the following scales of wages. A matriculate is paid Rs. 10 per month and an intermediate passed man is paid Rs. 15 per month and a graduate is kept on Rs. 30 per month. These wages might be tolerated elsewhere but in industry which has made huge profits, such conditions deserve to be censured most severely. And then, where remains the moral claim to protection of an industry which is actuated by such highly selfish motives?

Payment in kind.

Not are the employees provided with any amenities of life which should offset the low scale of wages. True, some factories give free kerosene oil for light and free fuel to labourers living in the factory quarters. Some skilled labourers are given railway fare when they come to join the factory. The superior clerical and skilled staff is given free quarters fitted with electric light which is also supplied free. In a few factories the superior staff is given provident fund benefits. Some factories also give a bonus on profits. But even when all these things are taken into consideration, it must be said that wages in the sugar industry are extremely low and constitute a disgrace to the industry.

Zamindar Proprietors.

Some of the sugar factories are owned by large Zamindars of the vicinity. There is a general complaint in some of the factories of *begar* and forced labour, sometimes altogether free and sometimes on reduced wages from the tenants of the Zamindars who are compelled to work for

the factories. Some Zamindar proprietors are using unfair methods of acquiring their tenants' lands near the factories and consolidating them into large sugarcane farms. Another serious complaint against these Zamindar proprietors is regarding the purchase of cane from their tenants which is discussed in this note under the section "Malpractices in the purchase of cane".

Time of Payment.

The wages in the industry are paid generally on the 15th of the next month. There does not seem to be any justification for this and it is felt as a real hardship by the workers generally. The wages must always be paid within the first week. The daily wages are also paid monthly although they are calculated on the daily basis. These should be paid at least fortnightly. The labour which is engaged through contractors gets still worse treatment. This system should be abolished and when it is considered indispensable the distribution and scale of wages paid by the contractors to the labour employed by him should be strictly supervised.

Employment of Foreigners in Sugar Factories.

I have been rather struck by the craze which some millowners have for Dutch Chemists, Chinese pan-men and other foreign staff of experts. So far as I am aware, equally, if not more, capable Indian experts are available, and there seems to be no reason why the industry should indulge in this luxury of keeping foreign experts. In one factory I was told that they had kept Chinese pan-men on very high wages but they proved to be much inferior to their head pan-men who was paid much less and they are going to get rid of them this year. By my remarks I mean no disrespect to these foreign experts or that I dispute their skill when the world pays a tribute to it. But I want to give preference to my countrymen when they are equally skilful and efficient. We have the example of the Beet Sugar Industry of England before us. There the heavy protection given to the industry is based on certain conditions which the industry must fulfil and these conditions, I am told, include that foreign experts shall be employed only when absolutely essential and that too with the sanction of the Government's Supervisory Committee. Besides the industry there is not permitted to use even a nail which is not manufactured in the country. The sugar industrialists in India, who have reaped such large benefits from protection, must remember that the protection given to them has to be justified by its benefits to the nation at large and not merely by the large dividends that they have derived from it.

Sanitation.

Sanitation inside and round about the mills has become a most acute problem. Generally, these mills are situated near small railway stations in the countryside. The atmosphere around a mill is generally so offensive that a man travelling inside a train knows about the existence of a sugar factory at the next railway station by that peculiar stinking smell which is felt pervading the atmosphere half-a-mile before he actually reaches the station. In and around the factory, therefore, the condition of the atmosphere can be easily imagined. The causes of this foul smell are mainly three, the sullage water from the factory, the molasses and the press mud. No scientific method of disposing of this sullage water has so far been devised by these sugar factories. Two of the mills, those in Siswa and Padrauna, allow their sullage water to run inside two small streams, the Khakra and the Bandhi respectively, which pass near these two areas. The result is that the stinking smell, instead of being confined to the precincts of the mills alone, spreads with these streams for miles together and makes the lives of people living in villages on their banks most miserable. These

streams used to provide drinking water to the men and the cattle of the villages on the banks. But now these rivers have become altogether useless for these purposes and the poor people on the banks are put to extreme trouble for lack of pure water for themselves and their cattle. Besides, these villages have now become the permanent home of mosquitoes and disease. One of the factories to whom I wrote to stop the flow of their sullage water into the river Khekra has surprised me by claiming a sort of right through usage of five years during which they say their water has continuously flowed into that stream. The Factory Act absolutely forbids any odorous water to flow out of a factory. It is really surprising why the district authorities or the Factory Inspector have tolerated the nuisance for such a long time in spite of serious complaints by the inhabitants of the affected villages. It is suggested that the proper way of disposing of this sullage water is through soak-pits. If that is so, Factory Law must compell the sugar manufacturers to make soak-pits for disposing of their sullage water and save the vicinity from foul odours.

Molasses are another cause of insanitation. It is a pity that this by-product which can be made to yield valuable spirits, is not permitted by the Government to be used for manufacturing them. The future of the sugar industry will be determined to a large extent by the use to which these by-products can be put. But so long the Government persists in its folly of forcing these by-products to be wasted, it is the duty both of the Government and the millowners to see that they are disposed of properly and are not allowed to rot near the mills, vitiating the atmosphere all round. Similarly, the press mud also, which can be used as very good manure, must not be allowed to be thrown about in the factory compound and become a cause of fouling the atmosphere. But besides these major causes of insanitation which are universal to all central sugar factories, some factories have been found to be altogether careless about the need of cleanliness in and around their factories. The number of sweeper employees in the mills can be taken to be a good index of their sense of cleanliness and I have found that in very few factories, their number exceeds 10. In the season when the cane carts line themselves on the road leading to the factory for distance extending in some cases from 2 to 3 miles, sanitation of the locality becomes a serious problem. But the factory-owners have so far done nothing to solve it, perhaps they do not regard it to be their responsibility. The drainage even in the factory compound, is generally conspicuous by its absence and where an attempt has been made to provide it, it is generally totally inadequate.

Sanitation, therefore, in and around the mills, is one of the most crying needs of the situation. The Government cannot shirk its responsibilities in the matter. Factories cannot be expected to take the initiative in solving such a big problem. It is the duty of the Government to come forward with an elaborate and complete scheme of sanitation in the mill centres and the factories must be compelled to put it into effect at their own cost.

Safety inside the Mills.

I have not been able to secure the exact figures of accidents inside the mills and so it is not fair to venture an opinion on the subject. But some of the factories which I have visited appear to be so inefficiently managed that I would be surprised to find if accidents in them are not frequent. In some factories, complaints have been made to me by the labourers that when one of them is injured the factories take advantage of their ignorance and try to escape paying compensation to them by unfair methods. But in some factories, I have noticed great care being taken to protect the dangerous parts of the machinery. I have almost learnt with delight cases in these factories where the factory managers took extraordinary trouble to secure compensation for their injured workers.

Housing of the workers.

The following nine factories have supplied me with figures of the number of quarters constructed by them for their factory employees:—

Name of Factory.	Bungalow or Superior Family Quarters.	Ordinary Family Quarters.	Double Rooms.	Single Tene- ments.	Remarks.
(1) Ghughli	—	—	61	54	
(2) Bati	18	—	—	75	
(3) Walterganj	35	—	—	43	
(4) Baitalpur	11	10	30	41	
(5) Padrauna	—	11	—	40	
(6) Kathkuiyan	—	30	—	124	
(7) Pharenda	—	—	30	70	
(8) Tamkahi Road	11	11	—	40	
(9) Captainganj	—	17	—	80	

The superior family quarters and bungalows are generally meant for the superior staff of the factories and are provided with almost all the luxuries possible in rural areas. The ordinary family quarters are decent houses and are chiefly meant for the superior clerical staff and the more skilled labourers who keep their families with them. The double rooms are generally meant for the skilled staff and the single room tenements for the semi-skilled and unskilled labourers. Water-taps are generally provided. The tenements are sometimes in the form of barracks and a tap is provided sometimes between 4 of them and sometimes between as many as 14 of them.

It is evident that apart from the quality of the quarters provided, their number is wholly inadequate to house all the labourers. It is true that a large number of workers live in the neighbouring villages and prefer sometimes to live with their families in the villages. But apart from them, the outside labourer is also generally far in excess of the number of quarters provided. The result is that a far larger number of labourers are huddled together in the small single room tenements and double room quarters than can be properly accommodated in them. I have received reports that sometimes in one quarter 10 to 15 persons have to sleep together.

This is a scandalous state of affairs. These factories cannot argue want of available land. The construction of the quarters also is not very costly. It is therefore most essential that adequate housing be provided by the factories for their workers, so that after strenuous work in the factory, they may have some recreation and proper sleep at least.

Some factories do not provide quarters at all and the workers have to shift for themselves in thatched huts or rented quarters. This is sometimes disgraceful and causes untold hardship to the workers. Steps therefore must be taken to compel these factories to provide adequate housing for their employees.

Welfare Activities.

The factories have generally neglected this side of their work. But some factories are alive to their responsibilities in this respect and have

provided proper schools for the children of their employees and have made arrangements for medical aid and recreation clubs. But their number can be counted on fingers. Arrangements for medical aid of some sort exist in almost all the factories. The factory at Ghughli provides a middle school. The factories at Basti and Walterganj have properly conducted primary schools and also a recreation club, providing outdoor and indoor games. The factory at Pharenda has a good Reading Room and a Library in addition to a primary school. Some other mills may also be providing schools for the children of their employees, but I could not secure definite information about them.

Plight of one lakh Cane-growers.

So far I have discussed the conditions of the labourers working in the sugar factories. But there is yet a very large class of labour with whom the factories have dealings and whose plight is much worse than that of the labourers working in the factories.

The factories in Gorakhpur crushed some 579 lakh maunds of cane in the season 1936-37. This cane must have been purchased by them from at least one lakh peasants who grow cane in their small fields. The treatment that these cane-growers generally receive at the hands of the factory-owners constitutes perhaps the most serious scandal in the history of industry in general. The cane-growers bring their cane in bullock carts from distances ranging from one mile to twenty miles in some cases to sell it at the factory gates. Excepting three European mills at Gauribazar, Partabpore and Tamkoti Road, where the purchase of cane is so well organised that only the requisite number of carts come to their gates and are all purchased within 24 hours. All other sugar factories have no proper organisation for the proper purchase of cane and at their gates hundreds of carts huddle together and have to wait for their turns, in a few cases even for 10 to 12 days. Their condition during this period of stay cannot be adequately described in words. The cartmen in their ragged clothes have to keep watch over their carts night and day, in dreadfully cold weather and the bullocks have to remain under yoke for the whole period of the stay, all the 24 hours in the bitter cold without any protection whatsoever. There is no proper arrangement for food, either for the cartmen or the bullocks which have to live on dry fodder which the cartmen bring with them from home and which often runs short when the period of stay becomes abnormally long. There is not even proper arrangement for water for these men or their bullocks. Then there is competition amongst the cartmen themselves to get their cane weighed and sold first. Everybody is on the watch lest his turn be lost. There are frequent quarrels between the cartmen which sometimes assume serious proportions. I know of a case in which a quarrel at the weighment machine in the Ballia District developed into a free lathi fight, resulting in the death of one man. The competition between the cartmen has often led to the breaking of horns of bullocks. Some animals have got their legs broken. Some have even died. There is little parking space at the mill gates; so the carts have to line themselves on the road for long distances which have sometimes been known to extend up to three miles. The cane rules provide that there shall be adequate parking space provided for the cane carts by the mills. But the rule is honoured only in its breach and the carts completely block the road intended for public traffic. Whenever a car or some other vehicle comes on the road and has to pass it, it has to wait for hours and the hundreds of cartmen have to move their carts one way or the other to make way for the vehicle. In one place in Ghughli, I was surprised to find complaints from the cartmen that some District Board Chaprasi sent hundreds of their bullocks to the cattle pound, whenever their carts deviated from the bullock-cart road, and got them heavily fined. If the Chaprasi was tipped, he would leave the cartmen and his bullocks. This nefarious trade was carried on at a distance of a mile or more from Ghughli proper with carts which formed the rear of the long line of carts.

But this is not the worst of the whole story. It is when the carts come within a furlong of the weighment bridge at the factory gate that cart-controllers, the Jamadars and the Langriman, all must have their share of the Sellers' hard-earned money. Otherwise, the cart would not be passed into the "Senta" from where they pass on to the weighment machine and the whole labour of the cartmen in reaching there would be wasted. The rates of payment that have been charged in certain mills are as follows:—

Langriman As. 2 to As. 4, Senta Jamadar As. 4, gate cashier As. 4. At the weighment machine, the cartman had to be very careful, and for the slightest negligence was sometimes given a shower of filthy abuse and even beating at times.

Malpractices in the Purchase of Cane.

The ways in which the cane-grower is robbed are so many that they must be classified and discussed here separately. The purchase of cane by factories is generally made either through contractors or directly at the gate. The purchasers generally load cane at adjacent railway stations and send it to the factories in wagons. At the gate cane of only those carts is purchased who hold slips issued by the mills which are distributed by mill agents or big zamindars and other influential men who are able to secure them from the factories. The malpractices can therefore be classified as follows:—

- (1) by middlemen,
- (2) by contractors or other purchasing agents, and
- (3) at the factory gates.

Swindling by zamindars.

The most vexatious form of this swindling is practised by zamindars upon their tenants who grow cane. Being influential persons, they secure the passes from the mills in their own names and get the carts of their tenants weighed in their own names and receive payments. Then, out of these receipts, they deduct all their dues, legal and illegal, and give a small balance if any is left according to their calculation to the real cane-growers. This practice is also resorted to by the zamindar-proprietors of the mills and there is great discontent in the tehsil of Padrauna, one of the largest cane-growing areas in the district, owing to such practices having been adopted by the zamindar-proprietors of factories there. Some tenants here have so far received no payments whatsoever for the cane supplied by them to the factories, though according to the Sugarcane Rules payment to growers must be made immediately on weighment. Such practice of swindling by the zamindars is very common in the district.

Sale of passes to growers.

This has been another very widely prevalent malpractice. The men who carried on this trade were generally relatives or friends of the factory authorities. In the tehsil of Padrauna, these passes were sold even at Rs. 1-8 per slip. Here, a proprietor happened to be a candidate for election to the Legislative Assembly in opposition to the Congress. He refused to purchase cane from the carts of growers who had voted for the Congress. And when the poor growers would return back disappointed, one of the relatives of the proprietors would purchase at a distance of a mile from the factory the cane of the cart containing 20 to 30 maunds of cane for a nominal price of about Re. 1 and would transport it back to the factory in his own carts and realise full price for it.

Short weighments.

This practice of contractors and at the factory gates has been almost general in some factories. Some cases of such short weighments have

been shocking. In one case, which was reported to me, a cart weighing 32 maunds was weighed as only 20 maunds. Short weighments of a maund or two are the rule in many factories.

Manipulation of weighments.

This was another practice resorted to by certain contractors and factories and was detected in some places. The growers were so hopeless and generally ignorant that they could never detect such swindling.

Deduction for Freight, Driage and Charity.

These were very common by the contractors who loaded cane in wagons. They accepted monetary consideration for weighment also, besides what they obtained through the sale of passes. Sometimes, they had their own professional cartmen who would meet the grower at a distance of a mile or so from the "Kanta" and say that if they got their cane transported by them, they would get it immediately weighed and thus they would charge an anna a maund as transport charges for one mile. The contractors also charged Rs. 2 per wagon as wagon hire from the growers. Some factories too realised money for charity from the growers whose cane they purchased and in some cases, the amounts were substantial. We have already seen the realisation of maney by unscrupulous members of the staff of some factories such as Langriman, Jamadar at Senta and gate cashiers. Some factories also made deductions for bad cane, although it was against Rules.

A more serious practice was detected in one factory, where the proprietor had purchased the growers' cane as cane from his own farm and then paid them only at the rate of As. 3 per maund. This practice continued for a long time undetected. It is estimated that in this way, he must have realised some 20 to 30 thousands of rupees by this swindling alone.

Excessive Crop.

The factories in Gorakhpur purchased some 579 lakh maunds of cane from the growers this year and paid roughly 1.45 lakhs of rupees as its price. But, those who have the knowledge of the widespread swindling practised at various stages on the grower are of opinion that the money which has reached his own pocket and the pockets of the cartmen together does not exceed a crore of rupees. And the trouble that he has been put to in the marketing of cane sends one shuddering. I have known cases where cane-growers have taken a vow not to grow cane again. This year, there was an excessive crop. The sowings were some 270 thousand acres in comparison to 213 thousand acres last year. Thus 57 thousand acres had been produced in excess of last year's crop. If 300 maunds be kept as the average produce of an acre of land, the total excessive production was about 171 lakh maunds. Besides gur being very cheap this year, much less cane was crushed for gur. The factories have crushed only 60 lakh maunds of cane more than what they crushed last year. The result is that there is at least 110 lakh maunds of cane still standing in the fields uncrushed. The cultivators have now lost all hope of selling it or putting it to any use and are setting fire to it. In this way, they have lost some 27 lakhs of rupees, which could have been saved to them if the Government had realised its responsibilities from the beginning of the season and made a serious attempt to get it all crushed. What this burning of such huge quantities of cane means to these poor people can be realised by any one who knows the poverty of the Indian peasants in Gorakhpur district.

Responsibilities of Factories.

The factories cannot escape their responsibility for this disaster which has come upon the growers. True, they have extended their crushing

season and crushed 60 lakh maunds of cane in excess of what they did last year. But that was very much short of what duty required from them in this crisis. They have made huge profits from the cane of these very cane-growers in the past, so much so that some of the factories have got back the capital invested. Was it not then their duty to continue crushing for a month more, even if it were at a small loss to save the peasants from disaster? The responsibility of the 14 factories in the tehsils of Padrauna and Maharajgunj, where this one crore maunds of cane have been left standing, was still greater for they could have easily continued crushing through the month of June without much loss. There is only one factory in the whole of Gorakhpur District which has done its duty heroically by the growers, and it must be honourably mentioned. It is the Ramkola Sugar Factory which still continues crushing the cane of these poor peasants and there some carts come from distance of even thirty miles. If like the Ramkola Factory, all these 14 factories had continued crushing till the end of June all the surplus cane would have been exhausted. But they have betrayed the growers in their time of need. As for the Government's callousness in this respect, we cannot find adequate words to censure it. They upset the whole equilibrium of the industry by enhancing the excise duty which the factory-owners immediately succeeded in shifting upon the cane-growers. They slept on till the end of March and made no efforts whatsoever to get the surplus cane crushed so that the whole crushing might be over before the end of the season. And when Pandit Govind Ballabh Pant, Leader of the Congress Party in the United Provinces Legislative Assembly, after an extensive tour of the cane-growing areas of Gorakhpur and after visiting a large number of sugar factories and discussing the problem with the cane-growers and the sugar manufacturers of the district, suggested to the Government to forego the enhancement part of the excise duty on sugar produced from the surplus crop, which was only way to induce the closed factories to restart crushing and the Government turned a deaf ear and allowed the peasantry to be ruined in the most callous manner possible. The Government has also lost by its short-sighted stubbornness some ten lakhs of rupees in duty which it would have received from production of ten lakh maunds of sugar, which would have been produced from the standing crop if the suggestion of Pandit Govind Ballabh Pant had been accepted by the Government.

And now, the Government is fiddling while Rome burns. The cultivators who have lost their all in this way, are being tortured by their zamindars to pay rents. The responsibility for the excessive sowings was wholly of the Government and of the factory-owners, who, through their Cane Development Societies and distribution of improved seeds, encouraged the farmers to increase the area under the crop indiscriminately. The improved variety of cane is not even easily crushed by the village kolhu, as its skin and fibre is very hard. So, now that the factories have closed down, the peasant must burn the standing crop in the fields.

Union of Cane-growers.

This pitiable condition of the cane-growers is due to their ignorance and want of organisation. Every time it is they who suffer. The Government does not care for them. The factory-owners are out to exploit them for their profits but seldom help to save them from ruin. They must therefore learn to stand on their own legs. The nucleus of a Sugarcane Owners' Association has therefore been formed. Both the problem of organising one lakh of sugarcane-growers distributed over a large district is a colossal one and it will take time before their organisation becomes a vigorous one.

Conclusion.

We have surveyed the whole field of labour connected with the sugar industry and studied their main problems. We find that the conditions of this labour are deplorable. In protected industry making huge profits

such conditions are simply intolerable. The protection still will be revised after the Tariff Board has submitted its report. We consider that this time protection to the industry shall be granted on certain specific conditions which the industry must fulfill.

These conditions we have already pointed out in the body of this short survey.

(11) *Letter, dated the 9th August, 1937, from Mr. M. K. Muniswami, Annamalai University, Chidambaram, Madras.*

I am enclosing herewith my answer to the questionnaire on sugar industry issued by you. In case you are going over to any place in the Madras Presidency, may I request you to inform me and give me a chance of supplementing my written memorandum.

I trust you will excuse the inordinate delay in sending this memorandum and place the same before the members of the Board. Thanking you in anticipation.

Enclosure.

ANSWERS TO GENERAL QUESTIONNAIRE.

Introductory.

Such general observations as I may make in my memorandum are applicable to South Indian conditions essentially. I have no knowledge of the state of affairs in North India. I have had talks with sugarcane producers in South Arcot and Vizagapatam districts. Though I am no sugarcane producer my observation leads one to acknowledge that there is an essential validity in the case, that they have put up before you, recently.

3. Nellikuppam Factory (The East Indian Distilleries and Sugar Factories, Ltd.) has capacity to crush the output of only 5,000 acres, but at present, in view of the low price of paddy and groundnut, many ryots have taken to sugarcane cultivation. The levy of the excise duty on Indian sugar did not (though it led to lower prices being offered for sugarcane, by the factory) deter people from expanding the acreage under cultivation of sugarcane. But for the difficulty experienced by the smaller producers of sugarcane in obtaining capital at low rates of interest, the acreage under cultivation in South Arcot District, would have exceeded even 11,000 acres, at which figure, I estimate the acreage under cultivation in South Arcot. Non-overproduction in cane is relatively more serious than overproduction in sugar. This is borne out by the disparity between the price trends of sugar and gur respectively. The area under cane must contract, as we become more and more successful, in increasing the yield per acre. Unless the Provincial Government actively assists in starting more sugar factories in this district, it is not justified in encouraging cane cultivation. Something must be done, to remedy this serious state of overproduction, to which I shall refer later.

5. I am anxious that the Board should recommend that big storage yards should be attached to factories. (The Mandya Sugar Factory is well equipped in this direction.) In the absence of such storage yards, bullock carts carrying canes have to wait for hours, before the cane is weighed and taken delivery of by the factory. As a flat rate is levied by bandy-owners for a distance of 10 to 20 miles the producer adjacent to the factory does not enjoy any appreciable advantage over the producer distant from the factory.

7. Small units have a chance only when sugarcane is not produced in a compact area but is available in scattered parts of a district. The area under cane would largely determine the size of the unit of sugar production. But an obstacle in the way of expanding such a unit lies in the fact that

by-products are not adequately utilised. Units of small size are generally less efficient, and even when organised by co-operative societies of cane producers, they can survive only if they are protected doubly from their distance from importing centres. There seem to be scope however for such small factories in the Northern Districts. Here a big factory in the wet areas where rent of the land is excessive, a big factory would not be a commercial proposition but small factories, say crushing 50 tons a day, would be economic provided cane is produced in dry areas, watered by wells. There is a feeling that Viyur Factory is too big and is not able to obtain the requisite quantity of cane.

7. (b) Under present-day conditions small units would find it difficult to compete with big units and if more such units are launched, the period of protection would have to be further prolonged.

11. (f) The cost of cultivation is much higher than in North India. In the Northern Circars where paddy is first grown on the land it becomes more difficult to cultivate cane. The period of rotation varies from 3 to 8 years and where drainage is difficult or where tracts are low-lying the period of rotation lengthens out. The cost of cultivation may be put at Rs. 400 per acreage. As frequent watering is necessary irrigation charges are rather high. The growth of cane as a commercial proposition in the Northern Districts is dependent on the construction of more wells in dry areas. For in wet tracts cane is not preferred by the ryot for the rent in such tracts is heavy and the ryot prefers paddy which is more easily marketed than cane for purchasing which there are no factories. Factories in such regions can come into existence only after dry tracts have been planted with cane. In the dry tracts of South Arcot district irrigation charges account for the high cost of cultivation and manuring charge's explain the high cost of cultivation in wet areas.

14. There has been definite improvement both in the quantity of cane available from each acre and the quality of cane. The sucrose content of the cane may be put to 19 to 21 for P.O.J. 2878 and Fiji B (thick canes).

15. Cane is liable to damage to disease in Vizagapatam district. Disease is rather occasional in South Arcot but every year the fierce wind that blows over this coastal region damages the crop and when cyclone occurs nearly 75 per cent. of the crop is destroyed.

17. The supply of cane is to a large extent influenced by the existence and competitions of factories. There are however other factors at work such as the difficulty of getting capital, the possibility of cultivating more attractive or more easy cash crops which would affect the supply of cane as in the Northern Districts. The competition of contiguous factories has not risen in South Arcot. Messrs. Parry & Co. are virtually in the position of a monopolist and are able to determine prices of cane. It is not easy to work successfully another factory in this district, though the supply of cane warrants the starting of other factories, in view of the strong and entrenched position of Messrs. Parry & Co.

18. (a) Usually not.

18. (b) (3) In the Northern Districts when the commission agent foresees a large increase in price of jaggery, he persuades his customers to cultivate sugarcane. This explains the fluctuation in the quantity of cane available in such districts.

18. (b) (4) This factor has induced cane cultivation in South Arcot. In case, however, of groundnut price recovering and cane prices continuing as at present acreage under cane may contract. I may add that in the Northern Districts, if it becomes easier to borrow more from the money-lender at lower rates of interest the area under cane will show increase.

21. Unlike in Mysore, there are no facilities for fast transport of cane to the factory in South Arcot. The carts fitted with pneumatic tyres hired to the contractor cannot be taken advantage of by the ryots who do not own the bulls to draw them. I would suggest, (1) in order to lessen

the injury to roads local bodies should license only those carts that are fitted with pneumatic tyres, (2) that bulls may be bought by Parry & Co., to draw the carts owned by them. Licenses to fresh road services should be granted only if local bodies are prepared to allocate such revenue for the repair of existing roads. The transport of cane to the factory would seem to be more bound with expansion of road services and development of village means of communication than with the construction of new railways in future in many parts of British India. The main obstacle to such road services in South Arcot lies in the very bad state of such road as exists.

22. In the absence of minimum prices of different varieties of cane such a system it has been said would cause havoc to the cane producer. It has been plausibly in favour of Zone that it would facilitate the organisation of co-operative societies for under such a system no factory can get its cane from a place where there is no co-operative society. But I submit that this is not the way to look at the problem. Zoning in favour of factories should be thought only when (1) either co-operative societies of cane-growers exist, or (2) when minimum prices have already been introduced for different types of cane. I am not against the introduction of such a system altogether. In fact such a system should have been introduced much earlier with fruitful results,—in North Bihar. But I am anxious that the Board should recommend, (1) that the power of creating zones in favour of factories be vested in the Provincial Government, and (2) that if factories should grant assistance to cultivators in the form of seed, manure, etc., the evils of truck system must be prevented where co-operative societies do not exist. Government supervision of such arrangements between factory and cane-grower may be recommended.

24. I am in favour of both new factories and extension of existing factories to absorb the excessive output of South Arcot. In the case of Northern Districts, however, the essential preliminary to the starting of new factories would seem to be construction of wells in dry tracts. In order to prevent unhealthy or lopsided development of factories, I am in favour of the Provincial Government being vested with the power of licensing new factories. Such a power must be strictly exercised by the Government. Otherwise we may have an excessive multiplication of new factories, reminding us of the state of affairs that we find in the case of Rural road services in some districts. A careful survey of the existing position and prospects of sugar mills in United Provinces and Bihar would seem to be called for on the part of Provincial Governments. In these provinces, pruning of uneconomic units and consolidation of the existing position of factories, rather than expansion of new units, would seem to be generally called for. Protection would be wasted if there is the final collapse of uneconomic as well as many economic units of sugar production.

27 & 28. The condition of main and feeder roads is deplorable. In fact they disappear during winter. Cane is brought from an average distance of twenty miles to the factory by country cart. If country carts are used for transporting cane from longer distances, there is the risk of deterioration of the cane. The maximum distance from which railways can carry to the factory would seem to be somewhere in the neighbourhood of 80 miles. Apart from the difficulties of getting capital for large factories, the existing difficulties of cheap communication between the several producing tracts in the Northern Districts give hope to small factories for some time at any rate.

32 & 33. The low freights quoted by railways for sugar produced in United Provinces seem to have adversely affected the markets for Bengal and Madras factories. This problem must engage the attention of the Board. A Marketing Board for sugar produced in South India coupled with the introduction of a maundage rate per mile instead of the present flat rate are called for at this juncture.

43 & 44. In North India, the price of sugarcane varies between the beginning and end of the season between 5 to 8 annas per maund on an average. The market for cane is however not so free in South Arcot and Northern Districts. Here factories fix the price to be paid for cane nearly a year before. In the Circars the commission agents dealing in jaggery are effectively influencing the price of the canes. Factories and commission agents deduct the principal and interest amounts due to them.

48. A feeling amongst the many ryots that the tonnage basis on which different varieties of cane are purchased by the factory at different prices do not afford stimulus to cultivate better types of cane with higher sucrose content. In spite of practical difficulties in the first instance the system of offering prices according to sucrose content must be recommended by the Board. The state cannot divest of responsibility as to the conduct of a protected industry so far reaching in its scope, so largely affected by the State fiscal policy. However individual it is now a great employer of labour, a great field of investment. Possibly the recent rise in the price of Java sugar might have been manipulated in order to weaken the case for protection for the Indian sugar industry. Premature withdrawal of protection might have disastrous consequences on the several industries. I would suggest however that in case, sugar factories are not agreeable to the grant of fair minimum prices, the rates of import duties may be reduced for the remaining period of protection. It is unfortunate that with the stabilised protection, the growers have not moved in the direction of co-operation. The fair price for sugarcane must be based on a sliding scale and the sliding scale must be framed with reference to the price of sugar.

(12) *Letter, dated the 28th April, 1937, from S. V. Ramanayya, Esq., B.A., M.Sc., Chief Chemist, Etikoppaka, Madras Presidency.*

I enclose herewith a note on the sugar industry in India.

Enclosure.

A NOTE ON THE INDIAN SUGAR INDUSTRY--NEED FOR CONTINUED AND EFFECTIVE PROTECTION.

Review of Sugar Industry in India.

The Sugar Industry Protection Act of 1932 gave a tremendous impetus to the development of sugar industry in India with the result that 146 modern factories are expected to operate for the cane-crushing season 1936-37, against 32 factories working in 1932, producing 7.6 lakhs of tons of sugar against 1.59 lakhs of tons in 1931-32; similarly, the acreage under sugarcane cultivation rose to 4,300,000 from 3,076,000 during the 2 years under review. This prevented a drain of 15.6 crores of rupees from India which was formerly paid mostly to Java for imported sugar. During 1934-35, out of the 12,50 lakhs of rupees (which was the estimated value of the factory-made sugar in India) according to Sir T. Vijayaraghvachar 600 lakhs were paid to the sugarcane-growers, 120 lakhs for the transport of sugarcane 200 lakhs for the wages of labour and 50 lakhs for the salaries of the educated staff. To this, may have to be added about 300 lakhs, which is the value of refined sugar and khandsari sugar produced in India during that year. That the benefit of protection is distributed to several millions of sugarcane growers, 2,000 graduates in Science, 10,000 educated staff and 2 lakhs of skilled and unskilled labour is thus obvious. Such is the magnitude and national importance of the sugar industry in India.

Need for the continuation of the protection.

Whether the sugar protection policy should be continued or not depends on the object with which the policy is inaugurated. If the purpose is to

stimulate sugar production in India enough to meet the domestic needs the object is more than achieved. If on the other hand, the purpose is to confer lasting benefit to the industry, the needs on the continuation of the protection policy is imminent.

Usually, fall of revenue to the Government consequent on decreased imports, and taxing the consumers for the sake of few producers are the arguments advanced against protection to any industry. It is true that with regard to sugar the import duty of the Government on sugar dwindled to 2 crores of rupees during 1936-37 from 8 crores of rupees in 1931-32. Yet it cannot be said that the Government is not aware that when the policy of protection is adopted imports and the revenue thereon steadily decrease. That protection implies taxing the consumer does not appear to be true, because he is to-day able to obtain cheaper Indian sugar than before. As an instance in point it may be said that the sugar made at this factory sold at Rs. 19-8 during 1933-34, while to-day it sells at as low as Rs. 14-8. That the consumer is not taxed but on the other hand, stands to gain, as he is able to obtain cheaper sugar appears to be true.

More than this the Sugar Protection Act of 1932 lays it down that the policy of discriminatory protection to the sugar industry shall continue till 31st day of March, 1946. It is on this assurance that 20 crores of public money has been invested in the sugar industry in India. It is therefore reasonable to ask for continued protection during the remaining period of 8 years.

Need for increased protection.

That the present duty at Rs. 7-4 per cwt. together with a surcharge of Rs. 1-13 per cwt. is not enough is clearly seen from the fact that 1-98 lakhs of foreign sugar are estimated to be sold in India during 1936-37, in spite of the fact (1) that several factories in India produce high quality sugar comparing with the best grade of imported sugar, and (2) that the country is able to produce enough and more. This duty is levied on the assumption that Java sugar does not sell in India less than Rs. 4 per imperial maund. But in fact, she sold her sugar in India at so low as Rs. 2-6-1 per maund (*ex-duty*) owing to large surplus of unsold sugar in Java. This means that the protective duty on foreign sugar should be at least two rupees more per cwt. This naturally leads to another question, namely whether such a high duty is not ridiculously too much. Yet instances are many to show that in certain European countries import duty per ton of sugar is as high as £24 while in India the duty stands at about £12 per ton of foreign sugar. In Australia, we have an extreme instance of total prohibition of foreign sugar. Thus the present protective duty does not seem to be adequate, to prevent foreign sugar dumping into India and during the succeeding period of 8 years, an increased measure of protection appears to be necessary.

Need for Fundamental Research.

Any amount of protection for any length of time does not enable an industry to stand on its own legs and to withstand foreign competition, when the protection is eventually withdrawn. The stability of the industry, and its capacity to survive foreign competition in the fulness of time, is intermingled with the scientific research of fundamental importance. India spends as low as 12 annas per acre against Rs. 12 for per acre in Hawaii and Rs. 3 per acre in Java. Therefore acre yields in India are 14 to 15 tons against over 50 tons in Java or Hawaii. The sugar recovery in India has not yet reached 9 per cent. as expected by the Sugar Committee of 1920. Yet it is steadily raising and stood at 8-87 during 1935-36, but it is a poor comparison with 12 per cent. recovery of Java. Thus from the time sugarcane is planted till the finished sugar is consumed, a need for a thorough investigation of the sugar production in India,

based on Indian genius, is surely a fundamental requirement of sugar industry before it can be expected to stand foreign competition.

The cost of production of sugar in India depends on the successful utilisation of its bye-products. The anticipated price of Rs. 1-8 per maund of molasses is never realised, and the disposal of this material even free is a problem indeed. While in other countries, it is used for power alcohol, its prospect does not seem to be in vision in India. Its use as a fertiliser, as a road surfacing substance, as a cattle food and as a raw material for biochemical industries like acetic acid, acetone and higher alcohols, etc., are all well-known. But we have no information on the prospect of a beneficial utility for this bye-product. Similarly the paper yielding and artificial silk producing qualities of Indian bagasse, are not yet investigated. In other countries where sugar is produced, research schemes are financed by the industry itself. But India has to depend on the state for carrying on researches as the sugar industry is heavily burdened with excise duty.

Sugar Excise Duty and its effects on the stability of the industry.—It is not known, whether sugar excise duty and its effects come under the purview of a present Tariff Board Enquiry. Yet this question is completely intermingled with every enquiry connected with Indian sugar. The excise duty which stood at Rs. 1-5 per cwt. of factory-made sugar from 1st April, 1934, to 27th February, 1937, has been suddenly raised to Rs. 2 per cwt. It has been complained that Rs. 1-5 per cwt. is too heavy. If this is granted, no comment need be made and Rs. 2 duty per cwt.

The only striking effect of the protective policy appears to be a rapid expansion of the sugar industry in India without adequate opportunities or facilities for stabilisation while in other countries especially Australia a protected industry is supported by generous state bounties, in India heavy duty is imposed on home made sugar side by side with protection the one neutralising the effect of the other. It is surely the duty of any state to see that the protection afforded to an industry is really an assistance for steady development and not a set back as is the case with Indian sugar.

The effects of the heavy excise duty on the general tone of the sugar industry are too well-known. In provinces where Sugarcane Act does not operate the tendency shall be to cut off cane price to meet the increased excise duty. While in the other province where the Act is operating, the tendency shall be either to close down sugar mills, or to crush the cane only, while it is at its best and then close. In either case the agriculturist for whose benefit the sugar protection policy was adopted is hard hit. He has to take to jaggery making, which is well-known for its wastefulness. The prospect of dividend to the capitalist, who invested his money on the sugar industry completely faded away. To the extent to which excise duty is imposed, the effect of protection decreased and it is really unfortunate, that time for consolidating or stabilising the industry has been denied.

Conclusions.

The magnitude of the potentiality of the sugar industry in India can be seen by the fact that overproduction and consequent dumping of sugar has already reached when only 12½ per cent. of the total cane is crushed in the modern factories. The surplus stock for this season is variously estimated, but 11 lakhs of tons of production against 9 lakhs of tons of consumption appear to represent the truth. While no body says don't produce enough to eat, every body has to say don't overproduce. Until the consumption in India increases or foreign markets for Indian sugar are found in the near future or some other uses (other than direct consumption) for sugar are found, overproduction should be stopped by an act of legislature. The question of restriction of sugar production in India

is intermingled with the interest of the United Provinces and Bihar, which produce nearly 85 per cent. of total sugar, in India. Yet the possibility of restriction on provincial or some other agreeable basis should be fully investigated. Increased protection, decrease in excise duty, restriction of sugar production to meet only the consumption, organised scientific research into the agriculture of sugarcane and technology of sugar manufacture appear to be the most pressing problems of the sugar industry in India as it stands to-day. A period of 6 years in the history of the industry is very little when we remember that Java took more than half a century to come to the present state of perfection. What is needed in future is much more than what is granted at present.

(13) *Letter, dated the 20th June, 1937, from Mr. R. Nagan Gowda, M.Sc., Ph.D., Hospet, Madras.*

I am sending herewith my answers to your general questionnaire.

ANSWERS TO THE GENERAL QUESTIONNAIRE.

Raw materials.

18. (a) The area under sugarcane in Hospet Taluk on which the local sugar factory depends for its cane-supply is given in the following table:—

Sugarcane area in Hospet taluk—

Year.	Acres.
1930-31	5,776
1931-32	7,031
1932-33	5,750
1933-34	6,088
1934-35	5,854
1935-36	5,890
1936-37	7,542

(1) Climatic conditions do not cause much variations in the cane area in this taluk.

(2) Prices obtainable for sugar might very likely affect cane area in future. The sugar factory has been working for only three seasons and it is difficult to say if the price of sugar had any effect on that of cane in those three seasons.

(3) Prices obtainable for jaggery have direct effect upon the area planted to cane. The high jaggery prices of 1930 were responsible for the increase in cane area by about 20 per cent. in 1931. It is possible that the high prices of 1935 were responsible for 28 per cent. increase in 1936.

(4) There is no alternative cash crop in this area.

19. The average area in cane for this taluk, before the coming of the factory may be put at 5,750 acres. This area supplied the local jaggery demand. The factory in a working season may be able to crush 2,500 acres of cane. So the area required for manufacture of jaggery and sugarcane comes to 8,250 acres. Hence it cannot be said that the production of cane in this area is in excess of its requirement.

I do not think any restrictions are therefore advisable in this area. To restrict the area in cane in Hospet taluk or in the neighbouring taluks of this district would be to dislocate the agricultural economy of the localities where this crop is grown. Sugarcane is a money crop. The ryot's financial position depends directly upon the area he plants to cane.

However restrictions seem to be necessary in the area under cane outside this Presidency especially in the United Provinces, Bihar, the Punjab

and Bengal, where the area in cane has increased considerably in recent years as shown in the following table:—

Provinces.	Area in 1935-36.	Average for 5 years from 1928-29 to 1932-33.	Increase.
	Acres.	Acres.	Acres.
United Provinces .	2,249,000	1,483,000	766,000
Punjab . .	473,000	421,000	52,000
Bihar and Orissa	465,000	284,000	181,000
Bengal . .	325,000	207,000	118,000
Madras . .	181,000	105,000	26,000
Bombay . .	121,000	95,000	26,000

This unrestricted increase in cane area in Northern India has knocked the bottom out of the jaggery markets of Deccan and Karnatic. Its effect upon the financial condition of cane-growers of Hospet and those under Tanka in this district is simply ruinous.

The previous Tariff Board stated that 25 million tons of cane was normally enough to make the jaggery requirements of this country. The amount of cane available for manufacture of jaggery in 1937 is about 44 million tons. In the interest of the 80 per cent. of cane-growers who have to dispose of their crop as jaggery the area in cane should be restricted.

Cost of cultivating one acre of sugarcane.

20. This a variable figure. The table given as Appendix gives an approximate average of expenditure incurred by a ryot and the yield obtained from an acre of sugarcane. The cost of cultivation can for the sake of convenience be placed under the 8 separate heads.

Preparatory cultivation.—Expenditure on this work varies from field to field and from season to season. In some season the hire for ploughs is only 8 annas per plough. In others it is 12 to 14 annas. Some fields require more drains than others.

Seeds and sowing.—During some season you can get a thousand sets for Rs. 2 while in others they cost more, stripping and cutting cane cost from 8 to 10 annas for 2,500 sets.

Manures and manuring.—Manure is usually sold by heaps. It costs from 6 to 12 annas per cart load. Cart hire depends upon the distance of the field from the village.

Ammonium sulphate also varies in price. In some season it is Rs. 3-12 per bag of 80 lbs. Now it is Rs. 4-6.

After cultivation.—The amount of work under this varies according to season and also from field to field. In some fields there is comparatively little weeding to be done. In seasons of heavy rainfall there are more weeds and wages for weeding also are high.

Miscellaneous.—Some fields, because of their proximity to village or roads need more watching and fencing than others.

Harvesting.—Cutting and stripping cost more per ton of Co. 290 than for Pundia. Cost of carting depends upon the distance of the field to the road and the factory and also on the condition of the road.

Land Lease.—This also is a variable figure. Lands in Mudlapur and Chitwadgi cost the highest, some fetching about 100 rupees an acre. In

Belugodu, Amaravathi, parts of Hosur and other villages the lease amount varies from Rs. 50 to 60. Lands in Kalliagatta Narsapur and parts of Hosur costs about Rs. 40 an acre per year. Though these are the leases paid by the cultivators for growing cane on the land the actual hire for the land comes to 10 to 15 per cent. more. A land is usually leased out for 2 or 3 years and is utilized by the lessee for growing a crop of paddy and one and some times 2 crops of sugarcane. The lease amount is fixed either at different rates for sugarcane and paddy or at a fixed money rate per acre per year whether for growing paddy or cane. The later is the method adopted in the case of the most of the best lands.

Paddy cultivation in majority of cases involves a loss to the ryot who grows it as a rotation crop to increase the fertility of the soil and kill the weeds.

Yield per acre.—This depends upon the soil, its fertility, the season, care and ability of cultivator. It varies from 17 to 22 tons per acre.

Main difficulties of the cane-growers.

21. Almost all cane cultivation in this area is done with the borrowed money and credit at lowest interest is still unavailable. The spread of co-operative movement will help in this direction. Even the present rate of interest charged by the Co-operative Societies might well be lowered for cultivation purposes to 4 per cent.

At present mature cane is used for seed purposes. When young and vigorous cane is used for planting purposes, the crop is more vigorous. Therefore seed farms should be started. The canals in this area are closed for 10 to 20 days in the months of January, February and March for silt clearance purposes. And hence cane cannot be planted either shortly before these months or during these months. The crop is planted necessarily in the later part of March or early in April. Since the new varieties arrow in November, the crop has hardly 8 months to grow and hence the yield is low. Silt clearance should be so arranged that it does not interfere with cane planting.

Most of our seed bed preparation is done in the short period of a few weeks in February and March. Sugarcane needs an exceptionally good seed bed, but since everybody wants to get it done at the same time there are not enough bullocks for ploughing. Hence poor work is done at a high cost. Some mechanical means like tractors should be made available to the cultivator to plough his fields. This would ensure both good work and speedy preparation of seed bed at comparatively low cost. Weeding is one of the costly items in cane cultivation. At present it is done entirely by hand labour. Cultivation implements suitable for this area should be introduced. Other methods of weed control should be tried.

Villages in wet land areas should be made more habitable. Once this wet land area was studded with thickly populated villages, Plague and Influenza have wiped out entire populations of some of these villages and others have become malarial. Most of these villages are uninhabited. Cultivators and labourers living in Hospet go to work in the fields around their villages. Walking back and forth to the fields sometimes a distance of 3 to 4 miles is wasteful both in time and energy. These villages should be made habitable and the cultivators encouraged to reside there. This would enable them to do better work and grow cane more economically.

Delivery to the factory.

The condition of the roads in the wet land areas is bad. They are all 3rd class roads or village communications vested in the District Board. They have been neglected for years. On these roads it is impossible to carry cane economically. They therefore should be repaired and put in good condition. The ryot pays land cess for the maintenance of these roads

and if the amount collected in these wet areas were spent on roads they would be in excellent condition.

As far as possible ryots should be encouraged to take up repairing of these roads on contract from the District Board instead of entrusting the work to professional contractors whose main motive will be profit.

The local bullock carts take a maximum load of a ton of cane and only heavy animals can draw such loads. Average carts bring about 12 cwt. of cane and there are not enough of these carts in this area. Hence carting of cane is very costly. Rubber tyred carts should be introduced here.

22. (a) Compulsory leasing of lands by factory will be undesirable. Enough land can be leased by private negotiation. This is quite easy in this area where considerable land is owned by absentee or non-cultivating landlords. Indeed the local factory had taken on lease from landholders about 300 acres in 1934-35 for 6 years. If the same policy has been continued they could have leased out much more land.

24. I am in favour of fixation of a quota for sugar manufacture by factories. The demand for sugar in India is estimated at 9 lakhs of tons. Production over and above this amount would create a slump market. This already has happened. The number of factories now in operation in India can easily produce much more 9 lakhs of tons.

. In order to enable the factories to pay a decent price for raw materials they must be enabled to get a good price for their sugar.

Madras and Bombay are climatically best suited for sugar production and yet they are not producing all their needs for sugar. They should be allowed to develop their sugar manufacture up to the limit of their sugar requirements. In those Provinces where more sugar than is consumed by them is produced either by establishment of new factories or extension of old factories, should be stopped.

Sugar production and sugarcane cultivation are in an agricultural country like India two of the few means of increasing the wealth of cultivators. It is unreasonable that any province should be deprived of this advantage simply because some other provinces have stepped ahead and established more factories than are needed to produce their requirements of sugar and want to dump it on the neighbouring provinces.

27. The mileage of good roads in our wet land area is far from being adequate. In the interior of the cane area, cane has to be carried by head loads from fields to carts.

The problem can be satisfactorily solved if the Government and the District Board take interest in the matter.

The part the Government has to play is this, our wet land area was 50 years ago studded with numerous villages scattered all over and all connected by roads passing through these wet lands. Now these villages have become de-populated and the roads neglected and allowed to become drains for the surplus water from the adjoining fields. The Government has in some cases given away road porambokes on patta. These should be resumed.

The District Board should repair these roads.

28. The maximum distance cane is brought by carts in any considerable quantity is 8 miles. Most of the cane reaches the factory within 24 hours. Cane from within 3 miles distance comes to factory within 12 hours of cutting.

29. Most of the cane-growers have a cart each and very few more than one. The cultivator usually employs his cart to carry his cane and he also hires carts from neighbouring dry land villages. The hire varies depending on the distance and the demand for the cart. The rate is not

strictly fixed on either the weight or the distance. The cart-man tries to get a minimum of a rupee per day. Sometimes he asks for so much for trip and at other times so much per ton. The following hire has been paid from different places:—

Village.	Distance to factory.	Load.	Hire.	System of hire.	Cost per maund per mile.
	Miles.	Tons.	Rs. A. P.		Pies.
Gudiobulapur . . .	2½	1	1 0 0	Contract.	2-8
Ditto . . .	2½	Cwt. 9 to 15	0 8 0	Per trip .	2-4
Kamalapur . . .	8	..	1 14 0	Contract.	1-7

41. There are a number of Co-operative primary societies in this area which are engaged in financing cane and paddy cultivation. The factory has organised a co-operative society which supplied last year about 6,000 tons of cane. The members of other societies also supplied cane to the factory but the latter prefers to deal with the cane-growers direct rather than with the society.

42. The carts stand in ques at the weigh-bridges at the factory for their turn to come. Sometimes carts have to wait for hours for their turn.

The cane coming from Mariammanahalli (14 miles off) and Munirabad by train is weighed on the weigh-bridges at those railway stations.

43. The factory has crushed cane only for the last 3 seasons. In the season of 1934-35, 4,000 tons of cane was crushed 11 rupees per ton was offered to the members of the Sugarcane Growers' Society (Factory Society), but a few delivered at that rate. Most of the cane was obtained by purchasing standing crop from ryots. In 1935-36 about 27,000 tons were crushed and 11 rupees per ton was paid for Pundia cane which formed the bulk of cane crushed and Rs. 12 per ton was paid for Co. 290 cane which was grown by a few ryots on small areas. In 1936-37 about 40,000 tons of cane was crushed. To the ryots of the Sugarcane Growers' Society whose members supplied 6,000 tons of cane at Rs. 11 per ton was paid. The bulk of the ryots' cane belonged to Pundia variety and was paid for at Rs. 8-8 per ton till March 1st, and Rs. 8 afterwards. About 200 acres of Co. 290 cane was paid for at Rs. 9.

44. Factory price for cane is evidently based on the price of jaggery.

45. The price of cane and its supply is greatly influenced by the price of jaggery. In 1935 when the price of jaggery was very high cane was not available for Rs. 12 per ton. In 1936 when the price of jaggery was a bit low, cane was available at Rs. 11 and in 1937 when jaggery sold at very low prices, cane was available for Rs. 8.

Cane in this area is grown mostly for jaggery and if the price of jaggery is high cane is converted into jaggery unless the price offered by the sugar factory is equivalent to that of jaggery.

This does not apply to Co. 290 cane that is grown this year on considerable area. It is hard and is not easily crushed in bullock mills. The grower sells it to the factory for the price the latter offers them irrespective of the price of sugar or jaggery.

46. The price of jaggery has varied as follows from year to year:—

Price of Jaggery.

Price per maund.

Year.	Rs.	A.	P.
1930	6	7	8
1931	4	5	4
1932	3	15	8
1933	3	5	4
1934	3	0	4
1935	3	0	0
1936	3	11	4
1937	2	10	8

The price of jaggery has gone down from 1930 onwards except in the year 1935 when probably for local reasons there was a sudden rise for a short period which put up the average for the year.

The main reason for this continued fall in the price of jaggery is the enormous increase in its production.

Production of jaggery in India.

Year.	Calculated net production of jaggery.
	Tons.
1924-25	1,698,000
1925-26	2,089,000
1926-27	2,313,000
1927-28	2,276,000
1928-29	1,778,000
1929-30	1,837,000
1930-31	2,245,000
1931-32	2,772,000
1932-33	3,245,000
1933-34	3,597,000
1934-35	3,692,000
1935-36	4,286,000
1936-37	4,400,000

} Estimated.

If you take 1925 to 1928 as normal years the average production of jaggery for these years is 2,226,000 tons per year. In 1933-34 it was 3,597,000 tons or an increase of 1,371,000 tons or 61 per cent. and it explains the reasons for the fall of the price of jaggery to 3 rupees that year. In 1929-30 when the production was only 1,837,000 or 17 per cent. less than the normal average of 1925-28 the price was Rs. 6-7-8. The fall in the price in 1937 is, it is clear, due to the increase in jaggery production.

47 & 48. The Sugarcane Act XV of 1934 has not been brought into effect in this Presidency and as a result the factories crushing cane pay the lowest rate necessary to get the cane. Here in Hospet in 1934-35 the factory offered Rs. 11 per ton or As. 6-6 per maund. In 1935-36 when the price of jaggery was still high the factory continued to pay Rs. 11 for Pundia and Rs. 12 per variety cane like Co. 290 and P.O.J. 2878. In 1936-37 at the planting time when the price of jaggery was rather low

and the factory was not sure what the price would be at the harvest time the price offered for forward contract for cane was Rs. 11 per ton. Later at the crushing time when the price of jaggery continued to fall the rate for cane was reduced to Rs. 8-8 for Pundia and Rs. 9 for varieties or As. 5 and As. 5-4 per maund respectively.

This year when the price of jaggery is quite low the offer for forward contract for the year 1937-38 season is Rs. 9-8. Even at this rate only a small quantity is contracted for.

The original object of levying a duty on imported sugar was to create a profitable market for cane. The previous Tariff Board estimated that As. 8 would be a fair selling price per maund of cane and on that basis fixed the duty to be levied on imported sugar. They calculated that paying As. 8 per maund of cane and selling sugar at Rs. 9-5-9 per maund the factories could make 10 per cent. profit.

The rates at Hospet for sugar have been round this figure till the middle of last year. The factory here enjoys a freight advantage of about As. 8 per maund, and yet cane has never been paid at the rate fixed by the Board namely As. 8 per maund. It was therefore necessary that the Government should have interfered and fix a minimum price for cane under Act XV of 1934. It was unfortunate that this was not done.

The basis on which the price for cane to be fixed may be either the cost of cultivation of cane or the price of sugar. The former should be a suitable basis if the price of sugar could be maintained at a steady rate as was contemplated by the previous Tariff Board. Since that does seem possible now the later basis may be adopted.

In almost all the important sugar producing countries of the world the price for the sugarcane is fixed on the amount of sugar manufactured from it.

Country.	Per cent. of Sugar value to grower.
Hawaii	48
Argentine	50
Phillipines	50-60
Puertorico	62-5
Java	Cost of production <i>plus</i> $\frac{1}{2}$ profit
Mauritius	60-70
Louisiana	50-60
British Guiana	55
Antigua	40 <i>plus</i> $\frac{1}{2}$ profit
Australia	60-75

The rate at which the cane is paid for Hospet works out at the following percentage of sugar produced from it:—

Year.	Rate per ton.	Selling price of sugar per ton.	Recovery.	Per cent. of sugar value to grower.
	Rs. A.	Rs.		
1934-35	11 0	265	9	46
1935-36				
1936-37	8 8	230	8-7	44
	8 8	200	8-7	50-5

It must be noted here that the cane crushed here is mostly Pundia which has sucrose content of 13-5 per cent. of cane and should in an efficient factory give a recovery of 11 per cent. of cane.

49. Cane must be paid for according to its sucrose content. Superior cane must be paid better prices than inferior cane. If a minimum price is fixed for cane giving the average recovery of last 2 years cane giving higher recovery must be paid a proportional higher rate.

There is the practical difficulty of obtaining sucrose content in small quantities supplied by the ryot. This has to be done by field of laboratory tests of small samples.

For early and late varieties of cane higher prices should be paid because such varieties occupy the land longer than others. The late varieties for instances would come in the way of the succeeding crop. The early crop would have to be planted earlier than usual. This would upset our rotation. It might mean the dropping of the paddy crop in the prior season. For this the grower must be compensated.

51. It is quite possible to introduce early and late maturing varieties into this area and extend the crushing season.

52. At present the Agricultural Department is carrying on experimental work in cane varieties, etc., at Hagari. The latter place, however, is not in the cane area and the conditions there are not similar to those of Hospet. The department could render us considerable help by transferring from Hagari their work in cane to Hospet, extend it to include experimental work on fertilizers, manure, cultivation methods, etc.

The Imperial Council has been doing considerable research work on sugarcane. It would be helpful to growers if the results of their work are published from time to time.

The Co-operative Department should finance cane cultivation to a much greater extent than it has done so far and should lend its money for this purpose at a much lower rate of interest than 7½ per cent. the present rate.

100. Jaggery is now rarely used in the manufacture of sweetmeats. Factory sugar is mostly used in these parts.

105. It seems that the effects of the excise duty on sugar has been to lower the price of cane. After the 1st of March, 1937, the factory reduced the rate for Pundia from Rs. 8-8 to Rs. 8.

108. The protective duty on sugar has completely cut off import of sugar into India and thereby helped build up the sugar industry. To that extent it may be said that protection has been most effective.

109. The present rate of protection should be maintained for the period of 8 years commencing from 1st April next. The average recovery of sugar is yet low and the cost of raw material is high. It would therefore not be possible to keep out Java sugar in case the duty is lower.

110. The factories should be granted license to manufacture arrak, country liquor from molasses wherever it is possible. This would, however, not be possible in the case of many factories and besides not all molasses could be utilized for this purpose. Hence it is necessary to manufacture power alcohol from molasses and enact legislation requiring the mixing of a certain percentages of alcohol with all petrol used as motive power.

APPENDIX.

Cost of cultivation per acre of sugarcane.

Kind of operation.	Units.	Rate.			Amount.	
		Rs.	A.	P.	Rs. A.	Rs. A.
Preparatory cultivation—						
Removing bunds . . .	3 men . . .	0	4	0	0	12
1st ploughing . . .	5 ploughs . . .	0	10	0	3	2
2nd „ . . .	4 „ . . .	0	10	0	2	8
	Carried over				6	6

Kind of operation.	Units.	Rate.	Amount.	
		Rs. A. P.	Rs. A.	Rs. A.
	Brought forward		6 6	
Preparatory cultivation— <i>contd.</i>				
Breaking clods	8 women . .	0 3 0	1 8	
3rd ploughing	4 ploughs . .	0 10 0	2 8	
4th „	4 „ . .	0 10 0	2 8	
Trimming borders	4 men . .	0 4 0	1 0	
Digging drains	10 „ . .	0 4 0	2 8	
Spreading earth from drains	4 women . .	0 3 0	0 12	
Furrowing	2 ploughs . .	0 12 0	1 8	
Straightening furrows	2 men . .	0 4 0	0 8	
Picking up clods	4 women . .	0 3 0	0 12	
				19 14
Seeds and sowing—				
10,000 setts	1,000 . .	2 0 0	20 0	
Stipping and cutting setts	1,000 . .	0 2 0	2 8	
Carrying setts . . . .	.....	...	0 8	
Spreading and planting	2 men . .	} 0 4 0	0 8	
	2 women . .		1 2	
	4 boys . .			
				24 10
Manures and manuring—				
Cattle manure	30 carts . .	0 10 8	20 0	
Carting	„ . .	0 5 4	10 0	
Spreading manure	4 women . .	0 3 0	0 12	
Nicypbos	2 bags . .	5 12 0	11 8	
Ammonium Surphate	2 „ . .	4 12 0	9 8	
Carting . . . .	.....	...	0 4	
Application	4 women . .	0 2 0	0 8	
				52 8
After cultivation—				
8 weedings	112 women . .	0 2 0	14 0	
Earthing up	16 men . .	0 4 0	4 0	
Clearing drains	4 „ . .	0 4 0	1 0	
				19 4
Miscellaneous—				
Irrigation, etc., Labour—				
12 times in 2½ months	12 men . .	0 4 0	3 0	
28 times in 8½ month	14 „ . .	0 4 0	3 8	
Fencing and fence . . . .	.....	...	4 0	
Watching . . . .	.....	...	16 0	
Cleaning borders	8 men . .	0 4 0	2 0	
Cleaning field channels in co-operation with others	2 „ . .	0 4 0	0 8	
Putting up small temporary culverts in co-operation with others	2 „ . .	0 4 0	0 8	
				29 8
Carried over				145 12

Kind of operation.	Units.	Rate.	Amount.	
		Rs. A. P.	Rs. A.	Rs. A.
Brought forward			.	145 12
Harvesting—				
Cutting and loading and carting	26 tons	. 1 8 0	39 0	
Commission to Sowkar	„	. 0 4 0	6 8	
			<hr/>	45 8
Interest . . . . .	.....	...	10 0	10 0
Lease amount . . . . .	.....	...	70 0	70 0
		<hr/>	<hr/>	<hr/>
Grant Total . . . . .	.....	...	...	271 4
		<hr/>	<hr/>	<hr/>
			Tons	
Yield per acre			26	
			Rs. A. P.	
Cost of cultivation			271 4 0	
Cost per ton			10 7 0	
Cost per maund			0 6 2·2	

(14) *Replies to General Questionnaire furnished by M. R. Ry. V. Kuppa Rao, Asst., Kurur, Madras.*

PRODUCTION OF SUGAR.

1-9. Nil.

Raw materials.

10-18. Nil.

19. The area is not excess of requirements. The area in Karur taluk should be increased, as it is the nearest feeding area of the factory.

20. Cost of cultivating of 1 acre of sugarcane by an average cultivator—

	Rs. A.
Preparation of the soil, formation of ridges, etc.	20 0
18,000 sets at Rs. 3 per 1,000	54 0
Planting setts	2 0
Weeding twice	4 0
3 bags of sulphate of ammonia at Rs. 4-6 per bag	13 2
Labour to apply the same	1 8
8 bags of groundnut cake at Rs.* 3-10 per bag	29 0
Strengthening ridges	4 0
Watering, watch, etc., at Rs. 2 per month	24 0
Total	151 10

The average outturn per acre is 25 to 30 tons.

21. Nil.

22. (a) I hold the same view as the lease amount is Rs. 100 to 150 per acre and the cost of the land is 3,000 to 4,000 per acre, in neither case will it pay even 3½ per cent. interest.

(b) It is better to allot special areas where competition exists between the factories. Revenue taluks or firkas may be assigned for the particular factories.

23. As I am not an owner of the factory, I am not in a position to give any statement.

24. As there are very few factories in southern India I am not in favour of fixing quote or restricting licencing.

25 & 26. Nil.

27. Adequate, conditions of roads good.

28-45. Nil.

46. Yes.

47-49. Nil.

50. Duration for crushing is nine months. The period is sufficiently long for economical working.

51. Longer and shorter duration canes like Co. 352, Co. 281, Co. 419, etc., can be encouraged. They have been already introduced by the Agricultural Department.

52. Yes. The Co-operative Department may be requested to give loans on crops more freely. The Agricultural Demonstrators should be given more maistries at one for every 500 acres sugarcane and if feasible special demonstrators should be posted for concentrated areas of sugarcane at least one for a thousand acres.

Labour

53-56. Nil.

Power.

57. Nil.

By-products.

58-63. Nil.

Storage and transportation of sugar.

64-72. Nil.

Capital accounts and overhead charges.

73-79. Nil.

Efficiency of production.

80-82. Nil.

Marketing.

83-110. Nil.

(15) Representation from Mr. S. N. Venkatesa Iyer, Coimbatore, Madras.

I am sorry that when at Coimbatore I could not meet you or your Board to lay the grievances of sugar producing ryots—I had been away on an engagement—which will give you an idea as to how sugarcane producers have got to live now.

2. I own about 70 acres of good sugarcane wet lands in Singanallur village 4 miles (N) of Coimbatore. About 4 or 5 years ago, Singanallur village and other neighbouring villages cultivated nearly 2,500 and more acres of sugarcanes. Now within five years the acreage is about 10 acres to be exact. When I questioned Mr. Venkataraman, the expert, he says that we must cultivate the inferior canes he is grafting. I can submit that the cost of cultivation (even with the Pykara Electric baling—of which I have two machines) of an acre comes to Rs. 250 including seed canes, weeding, manuring and watering. Though the lands are wet from January, the water in the river Nugal goes low with the result that baling

has to be resorted to. The average yield is about 25-30 pothis per acre. In the war days (1914-1918) the price per pothi was Rs. 50 to 60. Now it is Rs. 10 or 12 per pothi. Hence so far as I see, unless something radical and effective is done, there is absolutely no ghost of a chance at least in South India. The excise duty will, certainly, worsen matters. I would request the Board to consider why flourishing villages of sugarcane have now been reduced to grow cotton and thus impoverish the soil. I may also add that the authorities and the agricultural college are more dead than alive so far as we, ryots are concerned. I can state with truth that Singanallur, Salur and other villages never get any help or are in any way influenced by the college or breeding station.

Reply received from Messrs. Bird & Company, Calcutta.

- (1) *Letter, dated the 13th November, 1937, from the Tariff Board to L. A. Craven, Esq., Messrs. Bird & Co., Calcutta.*

In the course of your informal evidence before the Board this morning, you promised to send additional notes and figures on the following points:—

- (1) Imports from Java and exports from India to Rangoon.
 - (2) Percentage of imports of cube sugar to total imports in 1936-37.
 - (3) Reasons for Java prices being higher in other ports than in Calcutta.
 - (4) Whether the actual disparity between Indian and Java sugar prices during the period after 1932 and before 1934 amounted to Re. 1 to Rs. 1-8 or not.
 - (5) Note on the present method of obtaining rebates.
 - (6) Rate of freight per maund from India to United Kingdom.
 - (7) A note as to what stock figures should be collected and how.
- The Board would be grateful if you could expediate their submission.

- (2) *Letter, dated the 16th December, 1937, from L. A. Craven, Esq., Messrs. Bird & Co., Chartered Bank Buildings, Calcutta.*

I enclose a statement replying to the questions you asked in your letter of the 13th November.

I very much regret the delay in sending you the information required but we have experienced a great deal of trouble in obtaining some of the information.

Enclosure.

1. Imports from Java and exports from India to Rangoon.

The statement below shows the imports of Java and Indian sugar into Burma—

Periods.	Java Sugar.		Indian Sugar.	
	Tons.		Tons.	
1934-35	16,574		2,699	
1935-36	15,225		1,908	
1936-37	3,069		19,211	
1937-38 (April to October) . . . . .	...		10,703	
Total	34,868		34,521	

2. Percentage of imports of cube sugar to total imports in 1936-37.

These figures are unobtainable, Mr. Srivastava was approached but he states that they are not obtainable.

3. Reasons for Java prices being higher in other ports than in Calcutta. Charges are higher on account of the following terminal charges which are levied:—

	Town Duty. (Municipal Charges.)	Wharfage.
	As. P.	Rs. A. P.
Bombay	8 4 per cwt.	0 1 3 per cwt.
Karachi	0 3 „	1 12 0 per ton
Jamnagar	Nil	0 8 0 „
Bhavnagar	Nil	2 0 0 „

4. Whether the actual disparity between Indian and Java sugar prices during the period after 1932 and before 1934 amounted to Re. 1 or Rs. 1-8 or not.

The statement below shows Java prices ruling at each port from January, 1933 to December 1933 together with average price of Indian sugar ruling during that period. The price of Marhowrah has been chosen as this represents a good average 1st Crystal Indian sugar.

Months.	Java.					Indian (Marhowrah 1st Crystal) f. o. r. Factory.
	Calcutta.	Rangoon.	Bombay.	Karachi.	Madras.	
1933.	Rs. A.	Rs. A.	Rs. A. P.	Rs. A.	Rs. A.	Rs. A.
January .	10 8	10 11	10 13 0	10 4	10 11	9 11
February .	10 6	10 7	10 13 0	10 3	10 8	9 6
March .	10 6	10 6	10 13 0	10 6	10 9	9 3
April .	10 4	10 7	10 12 0	10 5	10 6	9 3
May .	10 4	10 6	10 13 6	10 6	10 8	9 5
June .	10 5	10 6	10 15 0	10 8	10 11	9 7
July .	10 7	10 8	10 13 6	10 8	10 8	9 10
August .	10 8	10 8	10 12 0	10 6	10 8	9 14
September .	10 8	10 9	10 12 0	10 6	10 7	9 13
October .	10 8	10 8	10 12 0	10 5	10 11	9 9
November .	10 9	10 5	10 14 0	10 3	10 5	9 0
December .	10 3	10 1	10 7 0	10 0	10 2	9 0

5. Note on the present method of obtaining rebates on exports to Burma.

The present method obtaining rebates on exports to Burma is not very satisfactory in that, a long delay usually occurs in obtaining refund of the excise duty. In my opinion a far more satisfactory method would be that when the Indian sugar is booked to Burma direct from the factories

a certificate should be given by the Station Master of the Booking Station certifying that the goods have been booked to Burma. Production of this certificate should entitle the factory not to pay any excise duty on the sugars despatched. Proof of the sugar having eventually reached Burma would have to be supplied by the factory in the form of a copy of the Rangoon Customs House Certificate.

6. Rate of freight per maund from India to the United Kingdom.

I am informed that the rate of freight from Calcutta to any port in the United Kingdom is £2-8-9.

7. A note as to what stock figures should be collected and how.

I consider it essential that factories should be made to furnish details to the Tariff Board of their weekly stock position. Such statements should show the balance of sugar in stock on the opening of the period, despatches during the week, sales made during the week, total undespached balance and total unsold balance. It is understood that the Sugar Technologist has ample authority to compel factories to give this information.

Representations received on the problem of molasses.

- (1) *Letter, dated the 25th September, 1937, from P. S. Maker, B. S. Che.E., M. S. Che.E.Pr., (M. I. T.), Chemical Engineer and Sugar Technologist, Majhauia, Dist. Champaran.*

Further to my evidence before your Board at Patna on September 12, 1937, and as desired by your Chairman, I have pleasure to enclose herewith, a revised copy of my complete scheme for the economic disposal of Indian surplus molasses for purposes other than power alcohol. I would greatly appreciate if you will kindly publish my scheme in full, in your report which I understand will be out by the end of next month.

Enclosure.

UTILIZATION OF MOLASSES BY P. S. MAKER, CHEMICAL ENGINEER, MAJHAULIA, DIST. CHAMPARAN.

1. With the fast development of Indian sugar industry, the disposal of molasses has become a problem, and with its increased production every year and no outlet for its consumption, it is having serious repercussions on the industry. The most popular method, which at the same time is free from technical difficulties, is to ferment molasses into alcohol, and use the same as motor fuel. Most of the countries that lack petroleum resources, use power alcohol as a substitute. This however, is only possible under the Government protection and control and there is no reason why the Government of India should not pass such a legislation, providing compulsory mixing of alcohol with the imported petrol.

2. Besides the Power Alcohol question, various other proposals have been advanced from different quarters, in the past five years, suggesting the use of molasses as fertilizer, cattlefood, fuel, road surfacing, etc., but none of these have met any appreciable measure of success in solving the molasses problem. The proposed scheme will be a new departure in India, as far as the treatment of molasses is concerned. It calls forth immediate establishment, either in United Provinces or Bihar, of a highly technical and specialised Alcohol-Chemical Industry, on lines as it is being practiced to-day in many countries abroad. This scheme has nothing to do with the Power Alcohol, on the other hand, after fermenting molasses into Alcohol, it destroys Alcohol converting the same into such commercial products that have a ready market in India.

3. In the western countries, Alcohol is looked upon as an agricultural product, as it is chiefly manufactured from potatoes, cereals, molasses, etc.,

In the interest of Indian Agriculture, it is essential that new uses should be found for molasses, which is an important large scale by-product of the second biggest national industry. If such uses have an economic foundations and will thereby bring an extra return to the industrialist it is only reasonable to expect that he will pass on a part of these returns to the cane grower. Industrial Alcohol will be produced from molasses for use in various small scale industries and in the manufacture of other Alcohol products. The by-products of an Industrial Distillery such as Carbon Dioxide Gas, Cattle Food, Potash and Ammonia Fertilizers, etc., will also be of great benefit to the Indian Agriculture.

4. As molasses form the basic raw material of this scheme, consideration of its supply is of primary importance. It is estimated that factory sugar production for the year 1936-37 will exceed 1,000,000 tons, and molasses obtained would amount to nearly 450,000 tons. Of this figure, United Provinces, is responsible to the extent of 55 per cent. and Bihar 30 per cent. This figure does not include molasses from Khandsars. Allowing 100,000 tons of molasses for consumption by other industries, we will have about 350,000 tons left over as surplus, which means a regular supply of 1,000 tons a day for a plant operating 350 days in a year. The proposed plant, however, will have a daily capacity of mashing 100 tons of molasses only, as it is intended to prove that such an undertaking is commercially feasible.

5. *Scheme.*—This scheme calls for the controlled fermentation of molasses into commercial alcohols. These alcohols in turn will be converted into commercial solvents and plasticizers, which will be used in the manufacture of such alcohol products that have a ready market in India. Table I below gives the annual import figures of commercial products, which either contain alcohol or use alcohol in some form or other in their process of manufacture, or they represent as by-products of the alcohol industry. Same Table I, gives average import figures taken over the past five years from year 1930 to 1935:

TABLE I.


Product.	Value.
	Rs.
(1) Acetic acid	1,40,000
(2) Artificial leather	4,40,000
(3) Artificial silk	3,40,00,000
(4) Chemical manures	55,19,000
(5) Denatured spirits	8,45,000
(6) Nitro-cellulose lacquers	14,64,000
(7) Polishes of all kinds	21,07,000
(8) Wines and liquors	1,80,00,000
Total	6,25,00,000

All the products listed in Table I, above show a steady increase in their yearly consumption. And if the Indian alcohol and allied chemical industries be properly developed, most of these products can be profitably manufactured from Indian raw materials in India. The present scheme makes a moderate start in this direction and proposes to manufacture: (1) Commercial alcohols, (2) Commercial solvents, (3) Spirit varnishes, (4) Nitro-cellulose lacquers, (5) Artificial leather, (6) Recovery of by-products like Carbon dioxide gas and fertilizers. These products of alcohol are dealt with separately both from technical and economic view point.

6. *Commercial alcohol*.—In most western countries, Industrial Ethyl alcohol ranks first in quantity and value of production of all organic chemicals. It is the basic raw material in the chemical and process industries and finds application in a multitude of products. For instance the total available capacity in the United States of America for producing industrial alcohol is over 200 million gallons, manufactured mainly from imported molasses and costing on the average Re. 1 per maund of molasses. The methods of production and the controls exercised over mechanical, chemical and biological processes are highly perfected. By our mashing 100 tons of molasses daily, alcohol production of 95 per cent. strength will amount to 6,000 imperial gallons. As the Fusel Oil will have to be completely recovered for solvent purposes, about half of the entire alcohol production can be made into rectified spirits of finest quality.

7. The over-all cost of converting molasses into industrial alcohol will be As. 4 per imperial gallon of 95 per cent. strength. This includes all manufacturing charges, such as, interest, depreciation, insurance, labor, power, chemicals, and overhead. The cost of denaturing, when necessary, will come to 9 pies per gallon. The cost of molasses, in addition to the conversion costs per gallon of alcohol, will vary with the market price of molasses. Table II gives the conversion cost *plus* the molasses cost for producing a gallon of alcohol, with the price of molasses ranging from As. 2 to Re. 1 per maund of 82 lbs.

TABLE II.

Price per Maund of Molasses.		Cost per Gallon of Alcohol.
As.		As. p.
2		5 0
4		5 9
6		6 8
8		7 8
10		8 6
12		9 3
14		10 3
16		11 2

The present market price of molasses is 1 anna per maund, and allowing another anna per maund to cover the transport and storage charges, the cost per maund when delivered to the proposed plant site will not exceed As. 2 per maund. For our calculation purposes, however, we are taking the molasses cost at As. 4 per maund. Figured on this bases, the over-all cost of manufacturing a gallon of alcohol of 95 per cent. strength, will come to As. 5-9, which would be the lowest price on record in the world. This is made possible, under the proposed scheme, because of cheap molasses, cheap fuel, and by installing the latest design large Distilling Apparatus, which will be most efficient in performance.

8. Reliable figures for the total consumption of alcohol in India are not available. There are in operation five distilleries in the United Provinces, five in the Province of Bihar and two distilleries in the Central Provinces, and quite a number of small distilleries spread over other Provinces. The Excise Department, indicates a figure of 20,000 gallons of

alcohol a day in the form of country liquors for British India alone. In view of the prohibition movement recently advocated by the Provincial Governments, the present demand by the Excise Department must be ignored, again the present scheme calls forth the diversion of molasses-alcohol into commercial products. It is estimated that over 25,000 gallons of industrial alcohol a day is consumed by small industries throughout India. And this amount seems negligible when compared to 500,000 gallons consumed daily in the United States of America, for industrial purposes alone. The imports of Methylated Spirits into India though on decline, still amount to over 1,000 gallons a day. In the face of these facts, our daily production of 6,000 gallons of industrial alcohol could be comfortably absorbed by the Indian market, especially when our cost price amount to As. 5-9 per gallon, against the present market price of Rs. 1-1 per gallon for rectified spirits and As. 10 per gallon for the methylated spirit. According to the present scheme, however, most of the alcohol produced will be diverted into commercial products, which would give better returns per unit sale. And to meet trade requirements for the special quality rectified spirits or denatured spirits, it is intended to dispose of daily some 2,000 gallons of spirits at As. 9 per gallon, thus yielding a net profit of Rs. 300 a day on this sale alone.

9. *Alcohol cost analyses.*—Our basic raw material is molasses, one maund of which will cost us As. 4 only, and will produce 2.25 imperial gallons of 95 per cent. alcohol. This means that every gallon of alcohol made will consume molasses worth As. 1-9. The over-all conversion costs, as stated above, will not exceed As. 4 per gallon, thus bringing the total cost of alcohol to As. 5-9 per gallon. The cost of denaturant and other denaturing charges will come to 9 pies per gallon, and this cost has to be incurred, in case the produce has to be sold in the market as denatured spirit, otherwise the net alcohol cost when used in our own process industries for manufacturing various alcohol products, will remain at As. 5-9 a gallon. There can be no question about the availability and cheapness of molasses, but it may be asked, how the conversion cost of As. 4 per gallon was arrived at. A modern distillery, complete in every respect and capable of treating 100 tons of molasses a day will cost nearly Rs. 10 lakhs. In figuring out the conversion costs we must take into account the charges like interest, depreciation and insurance on the capital invested, and to consider other items like labor, power, chemicals, stores and finally the overhead charges. Ordinarily no interest is charged on the paid up capital investment, plant depreciation in case of a distillery is rather small, while insurance rate is slightly higher. In our case we are allowing 6 per cent., 4 per cent., and 2 per cent. respectively on a total investment of Rs. 10 lakhs, which amounts to Rs. 1,20,000 a year on an annual production of 18 lakhs gallons of alcohol. This charge comes to 1 anna per gallon. The daily wages bill consisting of 80 technical and skilled help, will amount to Rs. 200 or Rs. 75,000 a year. Thus the labor charge comes to 8 pies per gallon of alcohol made; while the overhead charge, which in other words mean executive labor will absorb another sum of Rs. 200 a day, or 8 pies a gallon. Regarding power costs, it may be mentioned that coal fired steam power plant will be installed, and our average steam consumption will be 25 lbs. per gallon of alcohol made. Our steam generation cost will come to Re. 1 per 1,000 lbs.; thus making the power charge come to 5 pies per gallon of alcohol made. Taking into consideration the power losses and consumption in other departments of the distillery, it will take another 3 pies of power for every gallon of alcohol made, thus bringing the total power charge to 8 pies per gallon of alcohol. Consumption of chemicals and general stores in a year's time will come to Rs. 56,000, thus adding another charge of 6 pies to the gallon. Table III, below summarises the over-all cost of making a gallon of alcohol of 95 per cent. strength, in a distillery having an annual capacity of turning out 18 lakh gallons of such alcohol. Molasses cost is taken at As. 4 per maund of 82 lbs.:

TABLE III.

Item.	Annual Charges.	Charge per Gallon.
	Rs.	As. p.
(A) Cane molasses	1,88,000	1 9
(B) Interest, depreciation and insurance	1,20,000	1 0
(C) Labor charges	75,000	0 8
(D) Power costs	75,000	0 8
(E) Chemical and stores	56,000	0 6
(F) Overhead charges	75,000	0 8
(G) Alcohol losses, etc. . . .	...	0 6
Total	5,89,000	5 9

10. *Commercial solvents.*—In the manufacture of Nitro-cellulose lacquers, solvents play an important part. The question of rate of drying, flow and gloss and the film characteristics are vital to lacquers, and these properties can be incorporated by the selective use of and proper blending of solvents which are classified by the trade according to their boiling points. To start with we will be manufacturing a few of the important alcohol and Ester type of solvents such as: Ethyl Ether; Anhydrous Ethyl Alcohol; Ethyl Acetate; Butyl Alcohol; Butyl Acetate; Amyl Alcohol; Amyl Acetate; Ethyl Lactate; Ethyl Acetoacetate; Diethyl Oxalate; Diethyl Phthalate; Dibutyl Phthalate and Diamyl Phthalate. This list covers a wide range of boiling points from below 100° C. to above 300° C., and will serve most of our requirements for the manufacture of high class nitro-cellulose lacquers, varnishes and various collodian solutions. In addition to the above active solvents and plasticizers there are the so-called diluents. The hydrocarbons—Benzol, Toluol and Xylol—are the most important materials in this class. They are of great value in the blending and compounding of the resin solutions with those of nitro-cellulose. The presence of moisture is fatal to a lacquer, therefore the solvents manufactured under the proposed scheme will be anhydrous. Absolute alcohol will be produced by employing the Azeotropic process of distillation.

11. The proposed scheme converts alcohol into such commercial products that will prove more remunerative than selling it as industrial alcohol. Table IV illustrates the difference between the price of alcohol and that of the price of solvents made therefrom. Price quotations are for the American products f.o.b. New York, reduced to per lb. bases in Indian currency. The last column gives our cost prices for the same products under the proposed scheme:

TABLE IV.

Solvent.	N. Y. Price.	Our Cost Price.
	As. p.	As. p.
(1) Ethyl alcohol, 95 per cent. . . .	2 0	0 10
(2) Absolute alcohol	2 9	1 9
(3) Amyl alcohol	5 3	4 0
(4) Fusel oil	7 0	6 0
(5) Acetic acid	3 6	3 0
(6) Ethyl acetate	3 3	2 6

Foreign manufacturers of cellulose lacquers buy their solvents and other raw materials from the outside markets, and they are paying more for

their solvent requirements than it will cost us to manufacture under the present scheme, as is evident from Table IV above. On the other hand we will be paying a bit more for the imported nitro-celluloses and special plasticisers. Still our cost of producing a gallon of finished lacquer will be less than the cost of any foreign manufacturer. This is because, alcohol our basic raw material will cost us nearly half of what it does the foreign manufacturer. The solvents produced will constitute our main raw materials for the manufacture of Lacquers, Varnishes, Artificial Leather, etc., which at present are entirely imported into India. Therefore, it is proposed to convert the balance of 4,000 gallons of 95 per cent. alcohol into commercial solvents. As there exists good demand for the commercial solvents, about 1,000 gallons will be sold as solvents which will be equivalent to 1,600 gallons of 95 per cent. alcohol. Making As. 4, on a gallon of solvent, our daily profit from the sale of solvents will amount to Rs. 400. The balance of the solvents, nearly 1,500 gallons and equivalent to 2,400 gallons of 95 per cent. alcohol, will be used in the manufacture of Lacquers, Varnishes, etc., etc.

12. *Nitro-cellulose Lacquers.*—The use of cellulose Lacquers began about the middle of last century, but only limited progress was made because of the scarcity, price and nature of available solvents. The real progress of the Lacquer Industry came with the introduction of cheap and ample supply of high boiling Ester solvents, and at the same time development and improvement in the manufacture of low viscosity nitro-celluloses. The use of Lacquers is increasing rapidly and they are gradually replacing the old type of oil paints and varnishes. In the United States of America alone the Lacquer sales in the year 1936 reached fifty million gallons. The entire automobile, aeroplane, shipping and railway industries of the world are being finished to-day with nitro-cellulose Lacquers, because of their quick drying, wide adaptability, attractiveness, and long life of their films. Some of the commercial articles on which Nitro-cellulose Lacquers and Varnishes are used as finishes are: Artificial Flowers; Artificial Limbs; Automobiles; Baskets; Bathroom Fixtures; Bobbins for spinning; Book ends; Brass goods; Brush handles; Buttons; Cameras; Celluloid articles; Clocks and Dials; Dolls; Electric fans; Electric goods; Fibre articles; Fire extinguishers; Fishing lines; Fixtures, Gas and Electric; Floors; Furniture; Games; Gas mantles; Glass shades; Hardware, all kinds; Jewellery; Lamps; Linoleum; Loud speakers; Machinery; Metal furniture; Metal work, all kinds; Musical instruments; Name plates; Novelties; Oil Cans; Optical instruments; Pencils; Pen holders; Pianos; Picture frames; Pumps; Radio goods and cabinets, Radio Panels; Scientific instruments; Shoe eyelets; Silverware; Steering wheels; Steam gauges; Switch plates; Thermos bottles; Toilet seats and tanks; Tools; Toys; Trunk hardware; Typewriters; Umbrellas; Vacuum cleaners; Walls of rooms; Washing machines; Window shades; Wooden novelties, etc., etc. From the above list an idea can be formed, how the establishment of Nitro-cellulose Lacquer industry in India would help development of so many other industries and to manufacture quality articles with finishes as attractive as seen on the imported articles. It would be the chief concern of the Research Department of the proposed undertaking to give all technical assistance and offer every facility, free of charge, to the users of our Lacquers, with a view to bring their products out in excellent finishes and at prices that will defy foreign competition.

13. In the manufacture of Nitro-cellulose Lacquers, the low viscosity nitro-cotton plays the most important part, and this material has to be imported from firms that specialise in its manufacture on large scale. The finished Lacquer contain on the average 11 per cent. by weight of nitro-cellulose representing in value nearly 25 per cent. of the total value of the finished Lacquer. In the handling and storage of nitro-cellulose, the same precautions are required as are necessary for other inflammable products as Petrol, Alcohol, Celluloid and many other articles in common and daily use. As shipped it contains 30 per cent. of denatured alcohol and in such condition presents no greater hazard than alcohol. Transportation by rail or steamer

of wet nitro-cellulose is allowed by all the foreign countries, who classify the material as an "Inflammable Liquid".

14. The consumption figures for the Paint and Varnish products in India are not available, but considering the large number of paint manufacturing establishments, it is taken that the consumption is fairly large and on steady increase. Besides our home production, the annual imports of Lacquers, Varnishes and Polishes amount to over Rs. 35 lakhs. The imported Lacquers like Duco, Valspar, etc., which will be our chief competitors, are being sold to-day at the Indian Ports at Rs. 18 per gallon. Our cost price for the same quality Lacquer, inclusive of all charges and packing will not exceed Rs. 10 per gallon, and we propose to sell the same at Rs. 11 per gallon *ex-factory*, and leaving the balance of Rs. 7 per gallon to take care of the marketing charges. Provision is made to manufacture 800 gallons of finished Lacquers to start with, thus yielding us an income of Rs. 800 a day on this account.

15. *Varnishes*.—Spirit Varnishes like Copal and French type are in good demand in the Indian market, due to their comparative cheapness, easy applicability and quick drying, although the film is not lasting. The basic raw materials necessary for their manufacture are:—Anhydrous Alcohol, Turpentine, Shellac, etc., which are available in India abundantly and chiefly. Therefore, quality varnishes will be manufactured both for the Indian market, as well as, for export purposes. Our cost of making a gallon of varnish will not exceed Rs. 2 per gallon, against the present market price of Rs. 3-8 a gallon at the Ports. On the varnish account we will be reserving As. 8 per gallon as our share of the profit, thus on the sale of 500 gallons of Varnish a day, we will have a net income of Rs. 250 a day.

15. *Artificial Leather*.—Mixtures of Anhydrous Alcohol, Ether and Ester solvents are largely used in the manufacture of Artificial Leather. And the present scheme having full facilities of a complete Lacquer manufacturing Plant, it will be comparatively easier to prepare any specified collodion solution or dopes for applying to a textile surface instead of a house wall or furniture. The required cloth will be purchased from one of the Indian Textile Mills, and by installing a suitable plant, the cloth impregnation, calendering, embossing, drying and finishing will be done simultaneously and by a continuous process. The import figures of Artificial Leather for the past two years are:

Year.	Sq. Yards.	Value in Rs.
1934-35	7,26,265	5,39,418
1935-36	6,87,719	4,93,266

There are other articles like Book Binding cloth and oil cloth for which import figures are not available, and they are all manufactured by a similar process that imparts a water proof coating to the surface. The proposed leather plant will have a capacity of turning out finished cloth at the rate of 80 linear yards per working hour, and taking on the average 20 working hours a day, our daily production will approximate 1,600 yards. The present market price of average quality leather cloth is Rs. 1-4 per yard, while our manufacturing cost will come to As. 14 a yard only. We propose to sell our leather cloth at Rs. 1-2 a yard, leaving us a profit of As. 4 a yard or Rs. 400 per working day.

16. *Carbon Dioxide*.—For every 180 parts of sugar present in molasses, while being fermented into Alcohol, some 80 parts of Carbon Dioxide Gas are produced or a theoretical yield of 48.8 per cent. Taking fermentable sugar as 50 per cent. on the weight of molasses and assuming gas recovery at 70 per cent. total daily production of commercial gas either as liquid or as dry ice will amount to 17 tons a day when the Distillery is mashing 100 tons of molasses daily. Allowing for stoppages in the Compressor Plant and other incidental shut downs our net daily production of Carbon Dioxide

Gas mostly in the form of dry ice will average 15 tons, under the proposed scheme. This valuable gas is a by-product of this scheme and its total cost to us will be its purification and compression charges only.

17. Carbon Dioxide Gas is extensively used in Industry and Agriculture. Its main use lies in commercial refrigeration, the artificial refrigeration (Dry Ice), now taking the place of old mechanical refrigeration (Ice from Water). Carbon Dioxide Gas, when compressed to about 1,000 pounds per square inch at about 60° F., liquifies. In the commercial manufacture of Dry Ice, the liquified gas is allowed to expand through a patented nozzle into large tanks, and the snow produced therein is hydraulically compressed into hard blocks before being exposed to the air, thus forming the Dry Ice. It is snowy white, weighing about 80 pounds to the cubic foot, and has a temperature of 114° F. below zero, i.e., 146 degrees colder than water ice. Dry ice contains roughly twice as much refrigeration pound for pound, as ordinary ice, which absorbs only 144 B. T. U. per pound at 32° F. Dry ice as a refrigerant possesses the following advantages to offset its higher cost as compared with water ice:—

- (1) Insulating effect of gas evaporated, permitting slower rate of heat absorption.
- (2) High heat absorptive value per unit of weight.
- (3) Lower temperature as a factor of safety in shipping perishable goods like fruits, vegetable and dairy products.
- (4) Evaporation to a dry gas which reduces maintenance of Cars and containers, and prevents heat leakage.
- (5) Carbon Dioxide itself has a slight preservative effect on food stuffs, thus the goods keep longer with its use.
- (6) Light-weight packages of butter, cheese, eggs, ice cream, confectionary, fruits and vegetables, etc., for shipment by mail or express to cover long distances.
- (7) Ideal refrigerant for the ships, railways and cold storage warehouses, as it will avoid the high cost of mechanical installation and its inefficient operation.
- (8) Dry ice freezes quick, makes possible shipment and storage of frozen products, and used as local anesthetic.
- (9) Replacing the liquid gas in the carbonated beverage industry. This will obviate the use of heavy steel cylinders. By the use of Dry Ice will also eliminate the danger of bursting cylinders and save the capital investment.
- (10) Dry Ice has a large field for use in various fire extinguishing apparatus.

18. It is not possible to over-emphasize the commercial importance of Dry Ice. India being a tropical and agricultural country, the development of Dry Ice industry will play an important roll in the general economics of the country. For instance in the year 1925, when the writer took up this work, the United States of America produced only half a ton of Dry Ice per day, and the development was so fast that the average daily production for the year 1936 amounted to 350 tons. Nearly 80 per cent. of the former liquid gas has been changed over to Dry Ice. For the first time in India and in the course of last six months only four plants with an aggregate capacity of 15 tons a day are under construction. Prior to this liquid gas was manufactured in various small plants in India employing the Coke Process, and these plants will soon go out of business. Under the proposed scheme, total Dry Ice available for marketing will be 15 tons per working day. Two compressors, of the three-stage intercooled type, each with a rated capacity of 1,000 pounds per hour will be installed. The gas being free as our by-product investment and other charges, per ton of Dry Ice, being the minimum, our manufacturing cost per ton of Dry Ice will come to Rs. 60 per ton or 5 pies per pound, and we propose

to sell the Dry Ice at Rs. 85 per ton or 7 pies per pound, thus leaving us a net profit of Rs. 25 per ton or Rs. 375 a day. At present Dry Ice is being sold at As. 3 per pound or Rs. 420 a ton. One new Dry Ice company registered in September, 1937, propose to sell at Rs. 210 per ton while its manufacturing cost comes to Rs. 85 per ton. It is interesting to note that our sale price per ton will be the same if not lower, than the cost price per ton of any Dry Ice establishment in India. This means that others have to wait till we are sold out. On the whole industry holds good future for the investor.

19. *Baker's yeast*.—The manufacture of Baker's yeast and other yeast products constitute a major industry in most western countries, where yeast is employed in the making of daily bread. The annual sales of one yeast company in the United States of America amounted to over Rs. 20 crores, showing a net profit of 25 per cent. During the course of fermentation, there is a considerable growth of yeast and most of which settles down at the bottom of the fermenters. Using 'A' yeast we will be producing daily some 2,000 gallons of fermenter settlings, each gallon weighing about 9½ pounds, and having a moisture content of 75 per cent. Our daily production of dried yeast will amount to nearly 5,000 pounds which is generally wasted by the distilleries. After secondary fermentation these yeast settlings can be filter pressed and moisture content reduced to 50 per cent. As such it is universally sold for bread baking, and also marketed in small tablets wrapped in tin foils for table use. It is very rich in proteins and contains on the average 4.5 per cent. nitrogen. For the first year or so, we are not counting on any returns from this product, but we do expect that the proceeds realised from small sales made either as Baker's yeast or Cattle Fodder, will more than compensate our recovery costs, and at the same time provide funds for the experimental and publicity work for developing the yeast market in India.

20. *Potash recovery*.—Another important feature of this scheme would be the recovery of Potassium Salts and Ammonium Sulphate fertilizers as by-products; which in other words would mean putting back into soil, what has been taken out by the cane crop. Countries that lack natural potash resources develop their latent supplies of by-product Potash, and to-day the American by-product Potash amounting to 500,000 tons a year is largely supplied from the cement, alcohol, and iron industries. Same three industries are now well established in India, and India if she chooses could become independent of her potash requirements. According to the proposed scheme the residual distillery waste, known as slop, is concentrated into 50 per cent. solids. The thick slop is sprayed into a specially designed combustion chamber, where it is allowed to burn. The ash known as vegetable potash is collected, grinded and thus made ready for use. Potash thus recovered, is a dark material of fine texture, carrying approximately 35 per cent. of K_2O , in the form of water soluble potassium salts. There is also present 1.5 per cent. of available P_2O_5 and 0.36 per cent. N_2 . Again the field experiments have conclusively proved their beneficial effect on the crop growth. As stated in early part of this report, the surplus amount of molasses awaiting economic disposal, approximate 350,000 tons annually, containing on the average 3.0 per cent. potash, as K_2O , and 0.2 per cent. nitrogen as N_2 , of which 60 per cent. of each, amounting to 8,000 tons of K_2O and 420 tons of N_2 , can be recovered in commercial practice. When expressed in terms of fertilizer salts, these amount to 17,000 tons of potassium salts and 2,000 tons of ammonium sulphate, recoverable every year, representing an aggregate value of Rs. 16 lakhs worth of fertilizers. The annual imports of chemical manures, even at this low stage of our Agricultural development amount to over Rs. 55 lakhs. The recovery of fertilizers, as outlined above, under the proposed scheme, will be taken up as soon as the capacity of the plant will be increased to 200 tons of molasses a day, as below this it will not be economical.

21. *Final products*.—Table V, below summarises our list of products as described above and made from 100 tons of molasses per 24 hours. The

allocation is only approximate, and the plant design allows flexibility in its various units to meet market requirements. Column 2, gives the unit cost price, calculated on lines as detailed in case of Alcohol in paragraph 9:

TABLE V.

Product.	Gal./Day.	Cost/Gal.			Market Price	
		Rs. A. P.			Gal.	
(1) Rectified Spirits .	2,000	0	6	6	0	9
(2) Comm. Solvents .	1,000	0	13	0	1	2
(3) Spt. Varnishes .	500	2	0	0	2	8
(4) N-C Lacquers .	800	10	0	0	11	0
(5) Artificial Leather, Yds.	1,600	0	14	0	1	2
(6) Dry Ice, tons . .	15	0	0	5	0	1

The total cost of making the above products amounts to Rs. 11,500 a day and the same will be sold to trade, *ex-our works*, for Rs. 14,000, thus leaving us a net profit of Rs. 2,500 a day, and according to the current market prices, the above products are worth Rs. 25,000, nearly 44 per cent. higher than our proposed sale prices. Such plants work three shifts of 8 hours each, and continue working throughout the year with occasional stops for repairs. Taking 300 as actual working days in a year, the annual profit would amount to Rs. 7,50,000 on capital investment of Rs. 25,00,000 only.

22. *Capital investment.*—Capital distribution as given in Table VI, below is only approximate. There will be certain departmental adjustments, but the total investment in plant will not exceed Rs. 20 lakhs. The amount allotted to each department covers everything like, cost of machinery, plant, fittings, installation charges, etc. Besides capital investment of Rs. 20 lakhs, another sum of Rs. 5 lakhs will be required as working capital.

TABLE VI.

Department.	Amount in Rs.
(1) Power Plant	3,50,000
(2) Water Service	50,000
(3) Still House	3,00,000
(4) Anhydrous Alcohol Unit	1,00,000
(5) Fermenter Buildings	1,00,000
(6) Ester Building	1,50,000
(7) Ether Plant	50,000
(8) Vinegar Plant	50,000
(9) Dry Ice Plant	1,80,000
(10) Lacquer Manufacturing Plant	1,25,000
(11) Artificial Leather Plant	1,20,000
(12) Molasses and Product Storage	1,25,000
(13) Drums and Packing Department	50,000
(14) Research and Control Lab.	50,000
(15) Mechanical Workshop	50,000
(16) Lands, Building, Railway Siding	1,50,000
Total	20,00,000

23. *Finance and management.*—Briefly the essentials to be considered in launching a new enterprise are:—

- (A) The undertaking itself,
- (B) The management,
- (C) The finance.

(A) There is no question about the urgency of the undertaking for the disposal of molasses. It has become an all-India question, and every sugar factory, especially those situated in Bihar and United Provinces, would welcome to an extreme degree any enterprise that will convert their waste molasses into valuable commercial commodities. The present manufacturing scheme though new to India, has long been established abroad on most profitable bases and there is nothing experimental about the scheme. The proposed plant will be employing the latest design machinery, equipment and process technique, and will be under the charge of an expert who has long experience of the industry in all its aspects. The same expert, has been manufacturing abroad similar products, in a Chemical-Distillery nearly ten times the size of the proposed plant, and has in his possession numerous technical reports, formulæ, manufacturing data and drawings, on which the proposed scheme is based. The expert is also in close touch with the recent developments this industry is making abroad. Therefore, the enterprise, as far as, its technical side is concerned, is a sound one. Again there will not arise any question of infringement of Patent rights over any of the equipment or process employed under the proposed scheme. Regarding its commercial side, the survey shows that there exists a good profitable market for the products, and it will be boon to the consumers who will be paying 44 per cent. less than the present market prices. Again the availability of cheap molasses, fuel, and absence of internal or foreign competition ensures continued success and expansion of the enterprise.

(B) The management and executive authority will rest with a Board of Directors consisting of 5-7 Directors. These Directors need not necessarily be heavy investors, but they must be men of vision, possessing industrial experience and commanding public confidence. It is, therefore, advisable that the Directors be selected carefully, because a properly selected Board, is one of the best important assets with which a firm can supply itself. It will not only attract the required capital, but induce men of proven merits to join the organisation, thus ensuring its success. Subject to the strict control and supervision of the Board, the actual work of the organisation in all its departments will be carried on by a whole time Managing Director, who will be assisted by four departmental heads incharge of: (1) Production, (2) Sales, (3) Purchases, and (4) Research.

(C) Total capital investment will be Rs. 20 lakhs. It is realised that before the desired capital will be forthcoming certain requirements in the minds of prospective investors must be satisfied, and the three elements that generally influence their decisions would be: (1) Income, (2) Control, and (3) Risk. The scheme on careful analyses promises a return of at least 30 per cent. on total capital investment of Rs. 25 lakhs of which Rs. 5 lakhs is the working capital. If out of Rs. 25 lakhs, total issue, Rs. 10 lakhs, be issued as preference stock at 6 per cent. fixed dividend the returns on the common stock issue will come up to 46 per cent. The entire management and business policy will be controlled by the investing public through a duly elected Board of Directors. And the scheme, being assured of the necessary technical skill, raw materials and ready market for the products, the risks involved are reduced to minimum.

24. *Employment.*—The present scheme, even in its moderate form, will be directly responsible for daily employment of nearly 200 hands as permanent staff throughout the year, and indirectly will help as many more hands who will be engaged in the transport, storage and supply of molasses, and quite a number in the sale and distribution of our

finished products. Of the permanent staff of 200, nearly 100 will be graduates recruited from Indian Science and Engineering Colleges, another 50 will be skilled workers, and the remaining 50 will consist of unskilled labor. This being a chemical and highly specialised industry, it holds out good future for the employment of technical graduates and those with aptitude for industrial research work. This scheme has a vast scope for development, and will ultimately lead to the establishment of several small scale industries as discussed above under industrial alcohol and lacquers, thus helping the employment question considerably.

25. *Prospects.*—The proposed scheme consuming only one-tenth of the available molasses supply is only a small beginning to satisfy part of country's requirements of Alcohol Products. With the fast development of small chemical and pharmaceutical industries, it is certain, that soon after the successful operation of the proposed plant, not only its own capacity will be increased to enable us to recover the valuable fertilizers but another plant, in somewhat modified form will be set up, to serve the distant markets of India. Another large and staple industry that could be developed in India on profitable bases, which at the same time will consume large volumes of industrial alcohol, would be the establishment of an Artificial Silk Factory. In the Chardonnnet process of Artificial Silk making, nitro-cotton is dissolved in Alcohlo-Ether mixture, and the solution is squirted through jets; while the latest type of Cellulose Acetate Silk, known in the trade as 'Celenese', is prepared by heating cotton with Acetic Anhydride, Acetic Acid and a catalyst. The annual imports of Artificial Silk into British India alone amount to over Rs. 3.5 crores. Considering the magnitude of Alcohol Industry abroad and the large imports into India of Alcohol bearing products, it will be no exaggeration to state that within a few years time, we will be able to solve our molasses problem. Instead of wasting over 350,000 tons of molasses a year, we will be converting them into commercial products valued at Rs. 5 crores, and this will be no small achievement in our national economy. Mention may be made, that the success of the prohibition movement will depend upon the successful solution of the molasses problem, because molasses will ferment despite the prohibition law, and one maund of molasses will give to the Bootlegger 15 bottles of country liquor at practically no cost.

- (2) *Letter, dated the 22nd June, 1937, from Mr. R. N. Johry, D. Tech. (Govt.), B.Sc., F.S.T.A., Chief Chemist, Sugar Mirchian Tola, Bareilly, United Provinces.*

I beg to submit herewith a reply to your valued questionnaire.

I have dealt only the molasses question as to my mind this is a vital question for the survival of the Home Industry.

111. Molasses is used in India for making tobacco mixture, and was purchased by the dealers during the cane season at about Rs. 3 to Rs. 4 per maund before 1934. Many provinces where there was no sugar factory paid fancy prices to the dealers. Big dealers were known as Sherawallas had their own storage godowns where they could store 100,000 (one lakh) gallons during the season. The molasses has been produced at a very low cost and there are many people who have got lakhs of maunds for almost 2 pies per maund, with the result that the unsold stocks before 1934 had to undergo huge losses. At the same time most of the promoters under doubts of not getting permission for opening a distillery, could take no interest in opening a distillery and utilising all the product which is produced at 3.5 to 4.0 per cent. of the weight of the cane crushed.

Molasses has been made a priceless bye-product and if the Sugar Industry has to go the price of molasses should not be less than 40 per cent. of the price of sugar. It is an irony of fate that a product which can be made a starting point for nearly all the organic, galenic and pharmaceutical industries has got to be fed in microscopic droplets to cattles, poor consumers

and the rest goes to gutters. Very valuable work has been done in the way of utilization of the product and Mr. S. Chaturvedi, M.S. (U.S.A.), of the Imperial Institute of Sugar Technology, Cawnpore has very nicely done a comprehensive survey of the problem.

(3) *Letter, dated the 12th July, 1938, from A. V. Varadaraja Iyengar, Esq., Bio-Chemist, Indian Institute of Science, Bangalore.*

I have the honour to submit herewith a memorandum on the Problem of Molasses for consideration by the Board. If required I am willing to supplement the same by oral evidence.

Enclosure.

THE PROBLEM OF UTILISATION OF MOLASSES.

A memorandum.

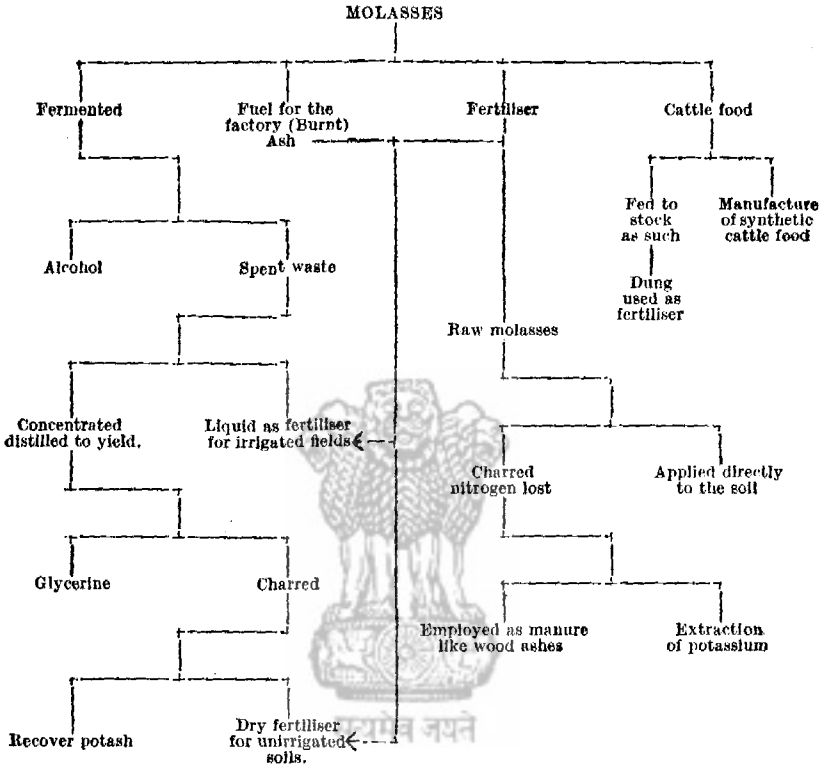
Molasses originates from or represents the residue resulting from the concentration of juice remaining after the separation of cane sugar from either sugarcane grown throughout the country, from beet in the Punjab or from palmyrah or date palm in Southern India. The quantity obtained annually is very large and with the cumulative production of sugar for the last few years, it has become an acute problem to find use for the same—nay even to dispose it of. The molasses obtained from sugar factories is so highly viscous that it cannot even be easily transferred into barrels. The question of storage of this commodity presents such extraordinary features to the manufacturer that he is rather prepared even to throw it away, instead of incurring expenses in preserving the same. According to a recent forecast the amount of molasses anticipated for the year 1935-36 is about 500,000 tons and the total for all these years will easily run upto a few million tons. It may be remarked here that this does not take count of the molasses derived from other sources such as beet or palmyrah (*tari*) and coconut palms.

From the point of view of transport of molasses, some attempts have been made to incorporate them with wheat bhusa and straw to get a dry solid product but they have not been satisfactory. Recently some attempts made at this Institute have provided encouraging results. Molasses can now be converted into a solid product which can be suitably utilised and easily transported in the cheapest manner possible. But this does not solve by any means the disposal of the immense quantity of molasses that has to be got rid off.

The adequate utilisation of the molasses is thus a problem of prime importance in India even at this stage. Apart from the fact that a few thousands of tons may be used such as in confectionary, etc., the quantity yet to be disposed of has reached an abnormal limit indeed. The difficulty for this is not far to seek. It lies partly in our ignorance of the composition of molasses and arises also partly from a paucity of scientific investigation on the factors which influence the inhibition of sucrose crystallisation from the molasses. It is well known that molasses contain about 15 to 20 per cent. moisture, about 8 to 10 per cent. mineral matter, 35 to 45 per cent. cane sugar 30-40 per cent. reducing sugars as glucose and a small quantity of nitrogen. Further it has a highly astringent taste combined with some bitterness which is believed to be due to the potassium present therein. Nothing is known regarding the nature of potassium compound which adds to this bitter taste. To what extent the sodium salts present in the molasses is responsible for this is still obscure. Again the highly disagreeable colour of the molasses is a feature which demands close study. It is worth noting that in addition to caramel which arises in the process of concentrating any sugar solution, the presence of saccharetin is chiefly responsible for this undesirable characteristic of the molasses. It

is known that the colour of the molasses becomes fairly light when treated with acids while in the neutral or alkaline state, it assumes quite a darker tint. It is therefore essential that a more detailed examination of the molasses should be made of the tannins, organic acids, etc., contained in them, for in our own experience, it has been found to contribute largely to the defects noticed before.

The following scheme will represent the several uses to which molasses has been suggested:—



Fermentation of sugars.—What strikes one from all these is the fact that the molasses is rich in carbohydrates and potash while the nitrogen is practically negligible. It is therefore not surprising to find that attempts should be made either to recover the sugars present or utilise them adequately. In view of the controversy prevailing over the conversion of the sugars present in the molasses into alcohol, this topic has been omitted from this memorandum. Suffice it to say that it does not solve the problem at issue completely besides being attended with considerable danger, when the country demands total prohibition of alcoholic beverages. From the fermentation point of view what is of more significance is the fact that sugars form the raw materials for several useful products. If we take an industry like that of glycerine fermentation, one obtains in addition to glycerine considerable proportion of alcohol and acetic acid. While it may be furiously contended that the soap is a more profitable source of glycerine, it must be mentioned that all the molasses is not intended to be used for this purpose, but whatever quantities be employed, the valuable by-products such as alcohol and acetic acids find immediate use in medicine and industry. Thus, there is a stimulus for industrial ventures. For instance, the availability in large quantities of cheap but pure glycerine

opens up a wide field for synthetic resin production, and for manufacturing cheap cosmetics and pharmaceuticals. It is rather unfortunate that the average scientist associates glycerine with dynamite and frowns upon such a material which has immense possibilities in an industrially virgin country like India. Further elaboration of this point is quite superfluous.

There are other fermentation processes for which molasses is eminently suited. India is lacking in gluconic acid and calcium gluconate is such an important chemical which fills a void in nutrition. Besides it is a costly compound. Sufficient amount of research work has been carried out in other countries. The utilisation of molasses for this purpose is a problem which can be tackled with considerable advantage.

One other product of industrial importance is the manufacture of isobutyl alcohol. The glucose present lends itself to the production of this substance under the action of certain specific micro-organisms. Whether fructose present in the molasses also decomposes under these conditions and if so with what results is somewhat obscure. The potentialities of the molasses for the preparation of oxalic acid through the action of *Aspergillus niger* have remained unexplored and offer a wide field for enquiry.

But a more profitable use for the different molasses is its serviceability for the manufacture of yeasts. Although this does not result directly from fermentation, this process is arrested suitably with a view to make the nutrients available for releasing sufficient energy for the rapid and high multiplication of a given type of yeast. Thus, for instance, if the carbon dioxide respired by yeasts in the process of fermentation be removed through aeration, the production of yeast is considerably accelerated. A preliminary study in the Indian Institute of Science has served to emphasise the influence of carbon : nitrogen ratio in this reaction. Whether the yeasts can be used as fodder or as fertiliser, it has not somehow attracted the attention of the investigators nor that of the industrialists. The particular use to which a variety of yeasts could be satisfactorily employed is largely determined by its composition. If yeast could be manufactured in sufficiently large quantities there is a wide field for research and scope for the investor to profitably turn these to valuable products such as substitutes for bakelite, horn, etc. Comparatively little is known of the composition of yeast as influenced by nutrition factors.

Fertilisers from molasses.—The utilisation of molasses as fertiliser is based again on its carbohydrate and potash contents. It stands to reason that the direct application of the same to alkali soils releases acids in the process of fermentation and thus neutralise the alkalinity thereby imparting more desirable characters to such soils. This has been demonstrated by the recent work carried out at Allahabad. But it is not yet well established whether this is of permanent or temporary nature. That different acids are released from molasses in the soil have been proved in a series of researches conducted at Bangalore. The mechanism of toxic action induced in the soil through such application of molasses for paddy growing, etc., has also been explained as being due to iron (ferrous) salts, etc. If the soil be kept fallow for over several weeks following the treatment with molasses beneficial results can be expected for the crop. It is not of much concern whether the application is made with a dry solidified product or with the viscous material as such, so long as the product is not insoluble in water.

But the more important procedure that calls for attention is the fact that the molasses is burnt either completely in specially devised furnaces and after sufficient treatment to have it in a solid condition or carbonised to yield the ash without much waste of fuel. In either case, the fertiliser value of the resulting ash is mainly due to the potash content. The above procedures lend themselves to easy extraction of potassium more probably as the carbonate. What is of greater significance is whether the molasses should at all be allowed to be burnt? A valuable commodity like the sugar which is necessary for every organism should not be wasted because it has no other use or because no other use has been devised for the same. The

attempts of the coffee bean growers to burn off the berries to keep up the price level by such means is not worthy of imitation. Moreover, the argument has been adduced that molasses does not contain any nitrogen and so can safely be disposed of by this method. One is entitled to differ from this assertion. It is really commendable that in some places in Europe, the molasses is first fermented to produce desirable products and subsequently concentrated, dried and burnt to recover the potassium it contains.

There is one more possibility of utilising the molasses in the fertiliser process. It is well known that certain cellulosic materials such as cotton stalk, cannot be employed for compost making in view of their resistance to attack by micro-organisms. Some years ago, the writer carried out an investigation at Bangalore on the feasibility of employing molasses as a biological starter in the disintegration of resistant cellulosic matter represented by bagasse. Some of the factors involved in the technique were varied and the experiment was conducted on a laboratory scale. The results of this study have revealed clearly that molasses has helped to break down the unattackable woody material, yielding a fine clean type of organic fertiliser, recognisable by its characteristic smell. The procedure has been systematically followed on the analytical side. Further investigation is under way to determine the other factors that are necessary for the production of a high grade fertiliser. The production of this compost material on a large scale is thus a possible industrial venture, the potentialities of which, it is not easy to predict.

Improvement of molasses through adequate treatments.—It will be clear from the above that there is an inter-relation between the two important products realisable from the molasses, namely, sucrose and potash. The presence of large percentage of potash is assumed (believed) to inhibit the separation or crystallisation of sucrose. On the other hand the recovery of potassium in the pure state or admixed with other mineral matter is achieved following the destruction of the organic matter present as sugar therein.

Recovery of Potash.—It appears that if the procedure adumbrated by previous observers be reversed, several possibilities present themselves. Since much investigation has not yet been carried out, this must be indicated only with reserve. It is well established that plants including beets, sugarcane, etc., derive their potassium so necessary for growth from the soil. On a rough estimate it has been ascertained that sugarcane alone extracts on an average about 100-150 lbs. potash per acre. Of this nearly three-fourth are in the soluble form being present in the juice. For instance in 1935-36, nearly 1,010.2 thousand tons of sugar were made available for consumption. In the process of preparing this sugar, the juice is to be concentrated along with its contents. After the removal of sugars the molasses is further concentrated and stored up. If the potassium taken up by the plant be not returned to the soil, the soil will soon be depleted of its potash, the lack of which leads to diseases on the one hand and to a poor development of the crop on the other. Taking the annual production of molasses at 500,000 tons, one can compute easily the total solid matter at more than 400,000 tons. If the potash content varies between 4 and 5 per cent. there is a potential loss of nearly 16-20 thousand tons of this component. This is indeed an acute situation.

The problem of potash recovery cannot adequately be solved through burning of the molasses for fuel or fertiliser purposes. The precipitation of potash as potash alum through the addition of Aluminium sulphate has already been patented. Whether it is feasible or not in this country cannot be easily assessed. On the other hand, the removal of potassium as cream of tartar in a highly acidulated medium has recently been studied in this Institute by the writer and is capable of adoption either as a small scale industry or a large scale factory operation. The technicalities of this process can be found in the patent applied for.

The residual molasses can serve for the manufacture of several useful products. It consists chiefly of sugars alone and a small percentage of

salts. The molasses can now be suitably diluted for fermentation purposes such as alcohols, acids and for large scale production of yeasts. The recovery of sucrose from this material is under investigation. But the diluted molasses can be inverted readily and clarified to yield a highly concentrated syrup which will form a ready substitute for honey. There is no doubt that such a syrup will also be an useful adjunct for table service. The most useful (and paying) procedure would be to prepare cattle feed. In view of the fact that most of the bitter principle has been removed by the method indicated above, the residual molasses has an agreeable taste with the original flavour. It is possible to produce cheap cattle feeds in factories adopting the above technique. Its nutrition value is chiefly due to the sugars present therein. If in the process of mixing it with wheat bhusa or rice straw or husk some nutritious material is incorporated it will add to the value of the food. Such a study is under way. The stock will consume it more readily.

It will be clear from the above that for the proper utilisation of molasses, it is necessary to divert it into several channels indicated above. Whether it is worthwhile to have one large factory to collect all the molasses and dispose it of in one locality or whether a few concerns can divide their interests into zones and work out these as a co-operative concern is a matter for discussion by the financier. Sufficient scope has been indicated for the suitable utilisation of this,—at present—wasteful product.

(4) *Letter, dated the 12th July, 1937, from V. Subrahmanyam, Esq., D.Sc., F.I.C., Professor of Biochemistry, Indian Institute of Science, Bangalore.*

I have ventured to address you regarding a certain matter which may be of some interest to your Board.

We have just evolved a process for the conversion of molasses into a solid product which can be dried and powdered easily. The product does not absorb moisture and can be easily transported in gunny bags.

Our researches have shown that the product is a valuable fertiliser with a high capacity for fixing the nitrogen of the air. On treatment with water, it behaves like a plastic and can be used for making various articles of utility and value. It can also be used for road surfacing.

The product is also suitable for the recovery of cane sugar. The process for the manufacture of the product is a very simple one. The raw materials required for its working are cheap and abundantly available. The reaction which is a chemical one is spontaneous and is accompanied by considerable evolution of heat, the entire reacting mass boiling within a few minutes after addition. The resulting product dries very rapidly and can be easily ground to a fine powder.

We have also worked a simple method for the separation of potash from molasses. This process is also rapid and comparatively inexpensive.

We are anxious to give you a demonstration of both the above mentioned processes and would deem it a favour if you and the other members of your Board could kindly spare us say half or three-quarters of an hour for the purpose.

(5) *Letter, dated the 12th July, 1937, from Dr. V. Subrahmanyam, D.Sc., F.I.C., Department of Biochemistry, Indian Institute of Science, Bangalore.*

During the past five years we have been engaged on the study of problems relating to the utilisation of cane molasses and have obtained a certain amount of useful information which may be of some interest to your Board. I have ventured to summarise our findings and am now submitting it for your consideration. I am prepared to amplify them by oral evidence if so desired.

(1) *Preparation of Edible Sugar Syrup.*—It has been shown by Messrs. B. N. Sastri and S. D. Agnihotri of this Department that (a) the bitter salts associated with molasses can be largely removed by the process of electro-dialysis. The resulting sugar solution is comparatively dilute. The dialysis by itself may not prove very costly, but the need for concentration may make the process rather expensive. (b) The salts can be preferentially removed by certain substances like charcoal, but the removal is not complete. This process does not appear to be very efficient. (c) Potash, which is the chief soluble salt in molasses can be easily separated by chemical precipitation. One of our workers, Dr. A. V. Varadaraja Iyengar has evolved a simple process for the purpose. The resulting sugar syrup is sweeter than the original product. The potash can also be sold separately.

(2) *Manufacture of yeast.*—It has been demonstrated by Mr. S. Rajagopal that cane molasses can be converted into this useful commodity after addition of suitable amounts of nitrogenous substances and small quantities of mineral nutrients. Practically no alcohol is formed during the process, which involves vigorous aeration. The yeast can be easily separated by centrifuging.

The yield of yeast is, however, only about 30 to 40 per cent. of what may be theoretically expected. The remaining part of the molasses is either lost as gas or converted into acid products which cannot be turned into yeast. It is well known that yeast has high nutritive value, but the Indian animals do not take to it quite readily. It is possible, however, that they may do so when mixed with other concentrates.

Yeast has also a good fertilising value, but considering the small yield, it is doubtful whether it has any advantage over direct application of molasses to land either as such or after some suitable chemical treatment.

(3) *Molasses as starter in composting.*—In presence of liberal supply of air, molasses ferments very quickly by itself but does not appreciatively assist in the fermentation of other materials (straw, fibre, municipal wastes and such alike) with which it is composted. In the absence of air, molasses forms large quantities of acid products, which will check the fermentation unless lime is added from time to time.

Molasses does not appear to be a good starter in composting. For that purpose substances which are naturally rich in nitrogen seem to be preferable.

(4) *Molasses as fertiliser.*—Apart from the small quantities of potash and other minerals, a chief fertilising ingredient in molasses is the sugar. The sugar decomposes in the soil yielding some useful products. The latter also help in the fixation of atmospheric nitrogen by bacteria.

Direct application of molasses to land appears, however, to be a wasteful process. A large part of the sugar is lost as gas. The quantity of nitrogen fixed from the air is not commensurate with that of sugar applied.

Mr. T. R. Bhaskaran of this Department has found that molasses can be decomposed outside the field and in the absence of air, it can be converted into salts which can be directly utilised, in nitrogen fixation. The quantity of nitrogen thus added to the soil is about three times what may be expected from direct application.

After application of molasses, the land must be rested for some time. The time of resting will vary with the nature of the soil. On most soils resting for three to four weeks may be sufficient but some types of soils (especially heavy and acid types) may require as much as 6 to 8 weeks. If the crop is planted before the resting period is over, it will be either killed out altogether or at any rate, so enfeebled that the yield will be lowered. If planted after sufficient resting, rice does very well on molasses soil.

In the soil, molasses forms largely soluble products. As these are liable to be washed out, profuse watering should be avoided.

The residual value of molasses to a second crop is comparatively small. Heavy application will not therefore prove profitable.

Molasses is useful in temporarily reclaiming alkaline soils. Attention to possibilities in this direction has already been drawn by Prof. N. R. Dhar of Allahabad. The beneficial effect of molasses is due to the formation of acid which neutralise the alkali of the soil. The effect is not, however, a permanent one as the acids will soon be destroyed leaving the alkali behind.

Direct application of molasses to land offers a number of practical difficulties. It is not unlikely to be of any great advantage except in areas adjoining sugar factories.

Conversion of molasses into a dry, solid product suitable for various purposes.—Messrs. T. R. Bhaskaran and S. C. Pillai of this Department have just developed a rapid method for the conversion of molasses into a solid product which will not absorb moisture and can stand transport over long distances.

The product is a good fertiliser and is much more efficient in its action than the original molasses. Its nitrogen fixing capacity is also very high. It can be easily applied to land.

If admixed with water, the product turns into a plastic which can be utilised in the manufacture of various articles of utility and value. It can also be used for road surfacing.

The new product can also be utilised for the recovery of cane sugar.

The manufacture of the dry powder is a very simple process. The chemicals required for the purpose are cheap and abundantly available. The reaction is extremely vigorous and is accompanied by considerable evolution of heat, which makes the whole mass boil within a few minutes. On cooling, the product dries rapidly and can be easily powdered.

We estimate that the dry product will be worth at least Rs. 10–15 a ton as fertiliser (as compared with other known fertilisers on the market). It may take some time, however, for the farmers to realise the value of the product. Provincial as well as State Agricultural Departments can render very valuable assistance in this direction. They can carry out demonstrations and distribute free samples to the farmers.

We do earnestly hope that the manufacture of dry product which offers several useful possibilities will soon be taken up by the sugar factories in the country.

(6) *Related literature.*—I am sending you under separate cover some of our research papers relating to the utilisation of molasses. They are largely of scientific interest but some of the findings are also of practical value. I trust that they will be of some interest to your Board.

(6) *Letter, dated the 27th August, 1937, from W. J. Alcock, Esq., 7, Hastings Street, Calcutta.*

Re MOLASSES DISPOSAL AND PRODUCTION OF A POTASSIC FERTILIZER.

Herewith please receive a Memorandum on the Disposal of Molasses and the production of a Potassic Fertilizer. •

Will you please place my proposal before the Members and on their arrival in Calcutta I shall be very pleased to answer any questions they may care to put to me.

Enclosure.

MOLASSES DISPOSAL.

This invention relates to an improved manner of utilising waste molasses to recover the potash therefrom, and it includes an improved type of furnace and plant for treating the molasses to produce ash with a high content of potash and also the ash which is produced thereby.

The invention also includes a fertilizer which is produced with this ash having a large content of potash, together with lime phosphates and nitrogen.

The rapid increase of the Indian Cane Sugar Industry has increased automatically the bye-product production of molasses to round about 500,000 tons per annum. The established outlets for molasses are well filled, leaving a heavy surplus of the bye-product which is without commercial value, whereas before the recent rapid development of the Cane Sugar Industry Molasses sold at round Rs. 2 per maund at the factory.

The surplus could be absorbed for the manufacture of power alcohol for use in motor-driven vehicles, but this entails large capital expenditure and it would be almost impossible to market the product.

The molasses could be used as a fertilizer in its raw state, but possibly years would elapse before the Indian cultivators could be educated to its use and ample supplies of water would be required to dilute the molasses before it could be put on the land.

At the moment the Cane Sugar Industry is faced with the serious problem of the disposal of its bye-product.

If the molasses is fed to an adjacent river or water-course the water will be polluted. If run into pits a serious nuisance to the neighbourhood arises, so much so that it may come within the Public Health Act and may cause the closing of the factory.

The process, furnace and plant, according to the present invention, obviates nuisance and makes provision for returning the valuable potassic contents of molasses in a readily assimilable form to the land, and may be used for the fertilization of sugarcane or other crops.

It is well known that potash is necessary to plant life to enable starch, sugar cellulose and other carbo-hydrates to be produced.

Potash plays a large part in the development of leaves and woody parts of the stems of plants and gives the plant more resistance to attacks of fungous diseases, or the like.

Sugarcane on an average extracts from the soil 100 to 150 pounds more or less of potash per acre and it is essential that this should be replaced either by potash recovered from molasses or fresh sources, if the land is not to be impoverished with the resultant low yield of crops.

Based on the fact that molasses has a content of round 9 per cent. of ash and this ash has a potash content of 32 per cent., or 3 per cent. of available fertilizer on the weight of molasses, the process later described enables a return to the land of 50 pounds of potash for every 100 maunds of cane grown, which is a return of practically half of the potash which is extracted by the plant.

Further it is possible by drying the filter press cake in the sugar factory (the cake contains lime phosphates and nitrogen) and by mixing same with the potassic products from molasses to produce at the factory a valuable compound fertilizer for application to all crops; as at the moment molasses and filter press cake have practically no value, the fertiliser can be manufactured and sold to the agriculturist at much lower rates than those ruling for imported fertilizers and leave a profit to the factory.

Molasses has a calorific value round 4,000 to 4,400 B. T. U. and may be burnt, but whilst this method is applicable to the raising of steam in steam boilers, the potash contents pass away in flue gases, owing to the fact that potash volatilizes at round about 1,430° F.

One object of the invention is to produce a furnace to burn molasses at the lowest possible temperature and recover the highest possible yield of potash.

The invention comprises a manner of utilising waste molasses to recover the potash therefrom which consists in causing the same to be fed in drops or threads from a rotating distributor into a furnace where the falling molasses is consumed at the lowest possible burning temperature to

conserve the potash contents the ash being withdrawn preferably whilst still red hot and allowed to cool outside the furnace, to be used as a fertilizer.

In this manner of dealing with the molasses, the molasses is preferably preheated by means of steam grid, or the equivalent to approximately 185° F. before feeding to the distributing drum, and the temperature of combustion in the furnace and in the flues is limited as far as possible to a temperature which does not exceed 1,430° F. in order to prevent as far as possible the volatilization of the potash.

The invention also includes a plant for burning waste molasses from cane sugar factories or gur refineries comprising a furnace into which the said waste product, suitably preheated, is introduced into or upon a revolving drum from which it falls as drops or threads to be burned as it falls.

This revolving distributing drum is preferably mounted on a water-cooled hollow shaft through which cooling water may be caused to flow.

In the preferred manner of carrying out the invention the revolving distributing drum is provided with outwardly projecting points from which the molasses may drip or be thrown off in drops or threads so that as it falls it will burn. This distributing drum may comprise a cylindrical or tubular central part with flanged ends or end discs forming projecting end flanges to said central part, a multiplicity of spaced longitudinal angles fixed to said central part, and a series of spikes connected to said central part, and a series of spikes connected to said angles.

In the preferred form of construction the distributing drum has projecting longitudinal ribs or ridges thereon, for example, ridges formed by the outwardly projecting legs of angle iron sections secured to the outer periphery of a cylindrical or tubular central part, said ribs or ridges forming hollows into which the molasses is fed from above and from which the molasses is tipped out as the drum is rotated, said molasses in being so tipped flowing off mainly from the projecting spikes arranged along the crests formed by the outer edges of the outwardly projecting legs of the angles. In order to direct the molasses to those spikes, grooves or guide surfaces may be provided on the projecting legs of the angles referred to above, and these be adopted to lead the molasses to the roots of the spikes, so that it will drop off or fall from the spikes in individual drops or strings.

The guide surfaces may be formed on the main longitudinal angles by means of small angles secured to the larger angles and sloping from points adjacent to the drum surface midway between pairs of spikes on each main angle to the roots of said spikes adjacent to the crests or outer edges of said main angles, with the object that as the distributing drum rotates the tendency will be for the molasses to be directed towards the spikes, to be thrown off by the spikes in drops or strings.

In a plant for burning molasses, the invention also includes the combination with a furnace, of distributing means for leading heated molasses to the furnace and for introducing the same into the furnace, said distributing means comprising a series of spaced nozzles or the like for dropping the molasses upon a revolvable drum inside the furnace.

A damper may be provided, preferably placed between the furnace chamber and the flue for carrying off the waste gases of combustion, for the purpose of controlling the draught and the rate of combustion.

The invention also includes a plant for burning waste molasses to recover the potash in the ash, comprising a battery of furnaces having means for supplying molasses, preferably in heated condition, through an overhead piping system to the furnaces through the distributing heads or nozzles or the like, preferably controlled by valves, distributing drums or the equivalent in the furnaces which are capable of rotation to distribute and to cause the molasses to fall as drops or strings through the burning zones of the furnaces; a system for water-cooling the bearings and other parts of the distributing drums; flues to carry off the gases of combustion; dampers or

means to control the draught; ashpits for the reception of ash, and floors upon which the ash be raked out.

The invention also includes a new product comprising the ash of waste molasses when burnt in a manner or in a furnace as described above, the said burning having been effected at the lowest possible practical temperature to conserve the potash content.

The invention also includes a fertilizer comprising ash from waste molasses, as described above, the said ash having been broken up or otherwise, suitably treated by screening or the like, and being mixed with dry powdered filter press cake from the cane sugar factory to produce a compound fertilizer suitable for direct application to the soil.

The Plant is operated as follows:—

The molasses is pumped from the main molasses tanks or may be run by gravity from Overhead Molasses Tanks to the Preheating and Feed Tank against the Disposal Plant, here it is heated with steam to render it fluid for passing through the feed nozzles on each furnace.

After the furnaces have been sufficiently heated up at the start with firewood, the molasses burn by themselves after passing over the Rotary Distribution Drum, which is of special design for this purpose, the molasses burns to a grey or brown ash; it is then raked out on to a cooling floor and allowed to cool off before screening and bagging.

Analysis:—

The Product contains on an average 32 per cent. of potash (K_2O) together with lime, soda, etc. The product is dry and powdery, we anticipate no difficulty in disposing of it, as potash is such a valuable fertilizer and required for practically all kinds of crops.

Working costs based on dealing with 1,000 maunds of molasses in 24 hours.

	Cost per maund of molasses.
	As.
Labour . . . . .	.72
Steam for powder and heating . . . . .	.23
Repairs . . . . .	.25
Depreciation . . . . .	.30
	<hr/> 1.50

One and a half annas per maund of molasses.

Estimated yield and value of product.

Taking the average Ash Contents of Molasses to be round 9 per cent., 100 maunds of molasses will yield 9 maunds of ash with an approximate Potash Content of 32 per cent.

Such a product based upon other Potash Products will have a value of Rs. 2-12 per maund at factory.

	As.
Reduced to one maund of molasses	3.96
Estimated value of product per maund of molasses	3.96
Less—Cost of treatment	1.50
	<hr/> 2.46

Say 2½ annas per maund treated.

A proposal to Manufacture Compound Fertilizers.

Attention is drawn to the possibility of making a Compound Fertilizer, by making use of Filter Press Cake which is at present valueless.

It can be arranged to dry the Filter Press Cake by waste heat from the Molasses Furnaces, this dried cake on an average contains about 7—8 per cent. of Calcium Phosphate in a very assimilable form to plant life. The Dried and Crushed Cake can be mixed with the Potassic Fertilizer and, if necessary, Sulphate of Ammonia added, and a first class Compound Fertilizer produced which would find a ready sale for practically all crops.

This Compound Fertilizer would contain all the necessary elements for fertilization of crops, namely, Potash of Lime and Nitrogen from the Sulphate of Ammonia.

Markets for Potassic Fertilizer.

As a Fertilizer.

As a Solvent for the bleaching of Lac.

In Chemical Works.

In Soap Factories.

Copy of Analysis.

From

H. N. Batham, Esq., M.A., F.I.C.S.,

Agricultural Chemist to Government,

Department of Agriculture,

United Provinces,

Cawnpore.

No. 323 R. C/1-B, Lab. No. 1858.

Dated, Cawnpore, the 5th September, 1934.

The results of the analysis of the sample of Molasses Potash from the Manager, The Basti Sugar Mills Co., Ltd., Walterganj, received from W. J. Alcock & Co., Technical Engineers, Calcutta, are as follows:—

	Per cent.
K ₂ O	36.40
S ₂ O	6.82
Cl	8.69
CaO	6.44
Insoluble matter	8.02
Fe ₂ O ₃ AlO ₃	4.81
P ₂ O ₅	1.13
MgO	9.36
Moisture	2.74
Organic Carbon	2.06
CO ₂	12.98

(Sd.) H. N. BATHAM,

Agricultural Chemist to Government,

United Provinces.

NOTE.—The high Content of Potash=36.4 per cent.

Extracts from the Works of Chemists of Repute on the value of Potash as a Fertilizer.

Mendeleeff refers to the Potassium Content as Carbonate K_2CO_3 , which is generally known as Potash.

The late Harvey W. Wiley, who was one of the world's greatest authorities on the Chemical Technology of soils and Fertilizers, definitely states the Fertilizing value of wood ashes, with a special reference to Potassium Carbonate, in combination with Magnesium Carbonate, as a Fertilizer for Tobacco.

Lloyd Laborn gives data on Cotton-Seed Husk Ashes and says the potash exists largely as carbonate which is readily available to Plants.

From this data it would appear that Potassic Fertilizer produced from Indian Molasses has a special virtue on account of its Potassium Carbonate Contents.

Extracts from "Principles of Chemistry" By D. Mendeleeff.

Whilst Potassium and its compounds occur in all kinds of vegetable ash. Among the generally cultivated plants, grass potatoes, the turnip, and buckwheat are particularly rich in potassium compounds. The ash of plants, and especially of herbaceous plants, buckwheat straw, sunflower and potato leaves are used in practice for the extraction of potassium compounds. There is no doubt that potassium occurs in the plants themselves in the form of complex compounds, and often as salt of organic acids. In certain cases such salts of potassium are even extracted from the juice of plants.

When the plants, containing one or more of the salts of potassium, are burnt, the carbonaceous matter is oxidised, and in consequence the potassium is obtained in the ash as carbonate, K_2CO_3 , which is generally known as potashes.

Extracts from "Principles and Practice Agricultural Analysis" By Harvey W. Wiley.

229. *Fertilizing value of Ashes:*—Primarily the fertilizing value of wood-ashes depends on the quantity of plant food which they contain. With the exception of potash and phosphoric acid, however, the constituents of wood-ashes have little, if any, commercial value. The beneficial effects following the application of ashes, however, are greater than would be produced by the same quantities of matter added in a pure manurial state. The organic origin of these materials in the ash has caused them to be presented to the plant in a form peculiarly suited for absorption. Land treated generally with wood-ashes becomes more amenable to culture, is readily kept in good tilth, and thus retains moisture in dry seasons and permits of easy drainage in wet. These effects are probably due to the lime content of the ash, a property moreover favourable to nitrification and adapted to correcting acidity. Injurious iron salts, which are sometimes found in wet and sour lands, are precipitated by the ash and rendered innocuous or even beneficial. A good wood-ash fertilizer therefore is worth more than would be indicated by its commercial value calculated in the usual way.

246. *Potassium Magnesium Carbonate:*—This salt has lately been manufactured and used to considerable extent, especially for tobacco fertilizing. As furnished to the trade it has the following average composition:—

	Per cent.
Potassium Carbonate	35 to 40
Magnesium Carbonate	33 to 36
Potassium Chloride, Potassium Sulphate and Insoluble	2 to 3

The content of potash, as is seen from the above formula, amounts to from seventeen to eighteen per cent. The compound is completely dry, is not hygroscopic, and is, therefore, always ready for distribution. It is especially to be recommended for all those intensive cultures where it is

feared that chlorides and sulphates will prove injurious, especially in the cultivation to tobacco.

Extracts from "Cottonseed Products" By Lebert Lloyd Lamborn.

Cottonseed-hull Ashes:—Cottonseed-hull ashes have been on the market since 1880 and have come into great demand as a cheap potash supply, especially among tobacco-growers. The quality of these ashes varies greatly on account of impurities introduced, principally by the use of other fuel, with the hulls. The following table gives a summary of 185 analyses of this material:—

TABLE 14.—*Fertilizing constituents in Cottonseed-hull ashes.*

	Water.	Phosphoric Acid.	Potash.	Lime.	Magnasia.	Carbonic Acid.
	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.	Per cent.
Minimum	0.25	2.37	7.02	0.86	2.85	9.56
Maximum	22.30	15.37	44.72	19.35	17.15	11.59
Average	9.00	9.08	23.40	8.85	9.97	10.57

The potash exists largely as carbonate, which is readily available to plants, but there is also a considerable percentage of silicate of potash which is difficultly available. The value of Cottonseed-hull ashes depends almost exclusively upon the amounts of potash and phosphoric acid they contain.

Representations received from Confectioners, Fruit farms and Sugar-candy manufacturers.

(1) *Letter, dated the 6th August, 1937, from Messrs. Pawle Products Manufacturing Co., Bombay.*

As desired by your Chairman when our representative gave evidence before your Committee on the 3rd instant, we have pleasure in enclosing herewith our written representation on the position of our industry in relation to Indian sugar.

We hope our representation will receive due consideration.

Enclosure.

REPRESENTATION.

Confectionary is usually classified under 4 heads, namely, (1) Boiled Sweets, (2) Lozenges, (3) Pan goods, and (4) Caramels. Out of these 2 and 3 are almost wholly made of sugar while 1 and 4 contain about 75 per cent. of sugar.

At present all confectionary manufacturers use Indian sugar almost exclusively. However, the factories work only up to 60 per cent. of their capacity for the following reasons:—

- (i) Competition from English, Continental and Japanese Manufacturers who get rebate of sugar duty from their respective Governments.
- (ii) Total absence of exports outside British India.
- (iii) Excessive Railway freights.

It is an admitted fact that the Indian Sugar Industry is suffering from overproduction with the resultant evils of low prices and depreciated quality. India is a very vast but essentially poor country. The consumption of confectionery could be increased ten times if it is made a little cheaper so as to be available to the poorer classes who at present cannot afford to buy our products. With this end in view we would suggest to the Government to grant us rebate of the present excise duty of Rs. 2 per cwt. on Indian sugar used in our factories. This would result in our factories

working to capacity which in turn would evolve to some extent the problem of overproduction of Indian sugar.

As regards competition from foreign manufacturers we would suggest an increase of import duties. The Japanese imports should be particularly subjected to a heavy increase of duty, since with its depreciated currency Japanese exports of confectionary to this country have of late assumed alarming proportions.

Indian confectionary manufacturers have absolutely no export business outside British India since we are not able to compete in the foreign markets with European and Japanese manufacturers for the simple reason that these latter manufacturers get refund of sugar duties from their respective Governments. Thus the adjacent markets like Ceylon, Portuguese India, Straits Settlements, Persian Gulf, Africa and other Eastern Markets which should by right be served by Indian manufacturers are completely shut out from them and foreign manufacturers monopolise same. To stimulate export of Indian confectionary to these foreign markets, we suggest that Government should allow the manufacturers rebate of import duty on Java sugar used in the manufacture of confectionary so exported. If this facility is granted we are certain to develop a fair amount of export business since our products are absolutely equal if not better than the foreign products.

A question might naturally be asked whether granting of this export facility is not against the declared policy of the Government to protect indigenous industries. But since there is absolutely no export business at present this objection cannot be a valid reason for holding back this facility.

Again it might be asked how this export facility for Java sugar is going to benefit Indian sugar. We submit that by getting export business and thus expanding our output our working costs would be considerably reduced. This would enable us to sell our products at cheaper prices in the Indian markets and bring them within the reach of poorer classes and thus expand our home markets. This would ultimately lead to a bigger consumption of Indian sugar in our factories.

Excessive railway freight is another factor which hampers our business. Confectionary is classed as sixth class for Railway transport and the charge is 0.83 pie per maund per mile. The average selling price of confectionary has come down from Rs. 50 per cwt. in 1927 to Rs. 22 per cwt. in 1937, but the Railway classification still remains the same as it was in 1927. Although the value of our products has fallen by more than 50 per cent. still there has been no corresponding reduction of railway freight. The incidence of freight is thus 100 per cent. more than what it was ten years ago. With such high railway freight, which is out of all proportion to the value of the goods carried, it becomes prohibitive to send our goods to distant markets of India which are thus lost to us. We therefore suggest that the Railway classification should be proportionately reduced and confectionary be charged at second class rate which is 0.42 pie per maund per mile. This will eventually help us to serve the distant markets and so to consume more Indian sugar.

While at it we may refer to a very invidious distinction which the Madras and Southern Mahratta Railway are making. This railway has granted concession rates ranging from second to fourth class to a certain confectionary company at Samalkot and Nellikuppam who are thereby enabled to monopolise the South Indian markets almost exclusively. On our representing this matter to the Great Indian Peninsula Railway, the latter requested the Madras and Southern Mahratta Railway either to cancel these special rates or to allow the Bombay manufacturers similar concession rates over their Railway. We regret to state that the Madras and Southern Mahratta Railway have refused to do either of the two and as a result the Great Indian Peninsula Railway have pleaded helplessness in the matter. This policy of the Madras and Southern Mahratta Railway is neither just nor fair and it is high time the same is put an end to.

The policy of all the Railways should be uniform for purposes of classification and no exception should be made in favour of particular concerns.

To enable us to consume more Indian sugar than at present our suggestions would be as under :—

- (1) We should be granted rebate of excise duty of Rs. 2 per cwt. on Indian sugar used in our factories.
- (2) We should be granted rebate of import duty of Rs. 9-4 per cwt. on Java sugar used in the manufacture of confectionary exported outside British India.
- (3) The present import duties on foreign confectionary should be increased.
- (4) Railway classification should be brought down from sixth class to second class, i.e., 0-42 pie per maund per mile.

(2) *Letter, dated the 15th December, 1937, from Messrs. Soorajmull Nagarmull, 61, Harrison Road, Calcutta.*

With regard to the notes which you wanted of us to give you during the interview with you last week, we are sending you herewith the necessary notes on Candy which, we trust, you will find to be of help to you.

NOTES ON CANDY MANUFACTURE.

We have started candy manufacturing as a side-industry for the last two years. We manufacture two varieties called Kunda Misri and Tal Misri. The former is manufactured almost in all Indian provinces with the process differing from place to place, while the latter has been generally imported hitherto from Hong-kong and of late from Japan. Recently with the growth of Sugar Industry in this country, people have taken up the manufacture of Tal Candy, though the Kunda Candy is manufactured from time immemorial. Still, however, a good quantity is imported every year from the above-referred countries. It is apprehended that unless the Indian Tal Candy Industry which is still in its infancy is protected sufficiently against foreign import, the future of this side-industry is not very bright. It needs, therefore, the sympathetic consideration at the hands of the Tariff Board. We regret we have been asked to furnish details in this connection without affording us sufficient time and hence we are not in a position to furnish data about imports and the extent of competition from imported Candy, etc., but we believe our views given above represent the correct position. We suggest the following measures to help the growth of this side-industry :—

(1) Candy manufacturing should be treated as a process of sugar manufacture in factories where both sugar and candy are manufactured for purposes of the levying of excise duty. At present the factories have to treat sugar candy department as a separate concern and the sugar which is issued for candy manufacture has to undergo the excise tax at the very moment of its transfer from the sugar godown. This results in unnecessary loss of interest to factories on prepaying the duty on sugar though the same remains in the factory till its disposal. By treating Candy as a part of sugar manufacturing process, the factories can get the additional facility of remelting all the dirty syrup and dust, etc., which remains in considerable quantity as a bye-product of candy, and which is remelted in open pan cannot be as much purified as it is possible in the vacuum pans. Under the present Excise Rules the factories manufacturing candy cannot make use of the vacuum plant for refining the dirty refuse of candy process, as they become liable to double payment of duty on the same sugar if they avail the above facility. The levying of duty on candy, where it is manufactured along with sugar, is likely to solve this difficulty without causing any loss to Government revenues. It may be noted here that the quantity of sugar candy obtained produced from sugar is almost weight for weight and does not materially affect the amount of duty recoverable.

(2) Adequate protection should be granted to the Indian Candy Industry against imports from foreign markets.

(3) The freight for sugar candy charged by the railways at present is uniform with that of sugar, varying from place to place. Sugar candy should receive a special consideration in the matter of freight and special rates granted to sugar should also be available for sugar candy. Another facility needed in this connection is the unit of load. Candy is despatched only in small consignments and the special rate should be available in case of candy for such consignments.

(4) The manufacture of candy is all done by the open pan boiling. Sugar is melted in open pans and treated with milk and other chemicals to make a refined syrup. The syrup has then to be boiled on the open pan and when it gets concentrated, it is allowed to crystallise in moulds of different shape. In Bengal it is generally moulded in iron pots of U-shape wherein a web of yarn is woven alongside which the syrup is allowed to crystallise. It takes about 2 days for the crystals to form in the Kunda process, whereupon the syrup which remains uncrystallised is separated from the crystallised candy; the latter being packed and former again undergoing the same process mixed with fresh sugar. It has to be noted that the candy manufactured from the remaining syrup of the first boiling gives inferior quality, both in crystal and colour. The remaining syrup of the second boiling is boiled again and produced as brown sugar which fetches a very low price.

In the tal candy manufacture the boiling process is more or less the same but the crystals are cast in square trays instead of pots and without the help of any yarn web. The crystallisation in this case takes as long as a week, and syrup of the first and second production has to be reboiled which gives decreasingly inferior qualities.

The manufacture is entirely based on the skill and experience of the workmen who are scarce to obtain. There is good scope of scientific research both in regulating the process of manufacture, refining of sugar and introducing mechanical labour saving devices. This can form a useful line of investigation at the Research Institute at Cawnpore.

Candy is graded according to its colour and size of crystal and we have the following varieties:—

Kunda Candy—

- No. 1. White crystal.
- No. 2. Cream crystal.

Tal Candy—

- No. 1. Big white crystals.
- No. 2. Small white crystals.
- No. 3. White crystal uneven shapes.
- No. 4. Very small crystals.

There is the brown sugar as the bye-product of both the processes.

The following are the cost of production:—

Kunda Candy.

	Rs.	A.	P.
Cost per maund of Candy manufactured—			
Fuel	0	3	0
Chemicals and Stores	0	1	6
Packing	0	1	6
Labour	0	4	0
Loss on sale of brown sugar which is about 12½ per cent.	0	3	0
Depreciation of plant and overhead charges	0	3	0
Total	1	0	0

Candy recovered 87½ per cent.

Brown sugar 12½ per cent. per maund of sugar melted.

Tal Candy.

Candy recovered 66½ per cent.

Brown sugar and wastage 33½ per cent.

	Rs.	A.	P.
Cost per maund of candy manufactured—			
Fuel	0	6	0
Chemicals and Stores	0	2	0
Packing	0	2	0
Labour	0	9	0
Loss on brown sugar and waste	0	8	0
Depreciation and overhead charges	0	5	0
Total	2	0	0

- (3) *Letter, dated the 16th April, 1937, from the Indian Mildura Fruit Farms, Ltd., Renala Khurd, District Montgomery, Punjab.*

Re THE PROTECTION OF THE SUGAR INDUSTRY.

In reply to the Press Communiqué, dated the 5th instant, by the Board we beg to submit herewith six copies of our views on the subject.

As a Firm dependent upon sugar we desire to have pointed out to the Tariff Board, Calcutta, that in our opinion delivered prices of sugar in India are higher than delivered prices in England and other countries where Fruit Preserves are produced and exported to India.

We have information of the fact that various Brands of Fruit Juices said to contain 50 per cent. sugar are being delivered *ex-London* at nine shillings per dozen Quarts *c.i.f.* Indian Ports and delivered to the trade in various parts of Northern India at Rs. 11 per dozen Quarts. These Citrus Squashes being shipped from England, where Citrus does not grow, are only subject to 25 per cent. import duties on the invoice value—the sugar content being ignored.

In our opinion these cheap Brands contain saccharine and should, in the interest of the sugar and Preserve Fruit Manufacturers in India, be assessed import duties at 40 per cent. of the value of Rs. 10 per case of one dozen Quarts *c.i.f.* any Port in India.

We are of an opinion that duties imposed by Section 2 of the Sugar Industry Protection Act, 1932, should be continued but to a lesser extent than before in order that the quality of sugar, manufactured by the Indian Sugar Company, may improve with foreign competition.

- (4) *Letter, dated the 29th May, 1937, from the Indian Mildura Fruit Farms, Ltd., Renala Khurd, District Montgomery, Punjab.*

We thank you for sending us General Questionnaire in answer to our request of the 16th April. The Questionnaire appears only answerable by Sugar Manufacturers and not by consumers. We answer the questionnaire as consumers:—

96-B. We have tried to obtain a standard grade of sugar but have failed to obtain this even from old established firms. So called grades of sugar vary very considerably if ordered monthly or yearly—Manufacturers in India apparently have no fixed standards of grading their sugar.

97. We suggest double bags for 1st class Sugar. We suggest that each grade of sugar should have standard markings on the bags throughout India—this might at least guarantee quality to a certain extent.

99. The consumption can only be increased by increasing the quality. We have bought foreign sugar to safeguard our Industry.

101. We have started but the Sugar Manufacturer or the Managing Agents will not or cannot supply sugar at a price which will enable us to compete favourably with imported preserves. The Managing Agents' fees may prevent any price reductions.

105. In our opinion it has helped the Imported Fruit Preserves containing sugar as sugar is obtained at a lower price in other countries and the sugar content is not considered when these Fruit Preserves are assessed at Port. Only the invoice value is assessed at 25 per cent.

Yeatmans' and other Squashes *ex-London* at nine shillings per dozen, does it contain saccharine? We cannot compete with this competition.

Representations received regarding export of Sugar from India.

(1) *Letter, from Messrs. Dawjee Dadabhoy & Co., 67, Canning Street, Calcutta.*

With regard to the oral evidence of our representative on the above subject we beg to place our views in black and white as under for your consideration.

The consuming capacity of Burma is between 300,000 to 350,000 bags per year of which 50 per cent. of sugar is locally manufactured there. The balance is supplied by India. Last year India supplied about 150,000 bags. Of these 150,000 bags we exported 50,000 bags.

The Burma sugar finishes by the end of June and from July Indian sugar is exported there till the end of November. This year the export of sugar is less on account of the manifold inconveniences from which we the merchant suffer. Our grievances in short are as under:—

- (1) That since the separation of Burma an excise duty of Rs. 2 per cwt. is levied on Indian sugar in Burma which is no doubt refundable by the India Government, but it takes about 4 months to get the refund. Thus a huge amount gets locked up in unremunerative investment. The best course from our point of view is that no duty at all should be charged by the Indian Government so that this refund delays may be done away with and free and unhampered flow of Indian sugar to the only foreign country available may add to the encouragement and prosperity of the depressed sugar industry.
- (2) The exporters cannot get a refund of Burma excise duty unless they buy sugar direct from the Mills and send the same to Rangoon under direct B. L. (or R. R.) through Messrs. Cox & Kings (Agents), Ltd. There is no mean of getting back the refund of duty on the locally purchased sugar. But there are numerous difficulties in buying sugar direct from the Mills which are as under:—
 - (A) The exporters cannot examine their goods at Calcutta.
 - (B) On arrival of the goods at Howrah the shipping agents take delivery of the same and export to Burma, as a result of which the exporters cannot know in what condition the goods reached its destination, and when and by what steamer they were exported to Burma.
 - (C) The exportes cannot claim damages which might occur during transit either from the Railway authorities or the steamer company.

(D) They cannot get their goods in time and consequently lose better market at Rangoon.

(E) They have to bear additional expense of about 3 annas per bag, which go to the shipping agents in spite of the shippers having their offices in Calcutta.

In view of the above difficulties we beg to suggest that the Government of India should look into the matter, and be pleased to give the refund of the excise duty charged at Rangoon, also if the merchants buy sugar locally and thereby safeguard the interest of the Indian exporters of sugar. But there should be arrangement for speedy refund within specific time, of say a fortnight of the Burma Excise Duty if at all charged by the Government of India.

(2) Letter, dated the 20th September, 1937, from Messrs. Jeetmall Kalloomall, 8/1, Sukhlal Johary Lane, Calcutta.

In support of my oral statement before the honourable members of the Tariff Board and as desired by them I beg to submit you hereunder that Indian sugar can be exported to United Kingdom provided it is helped by the British Government and be regarded as if certified Colonial Sugar.

The statement, in support of my views, taken from a Sugar Market Report is attached herewith and which speaks of itself.

Please place the same before the honourable members for their perusal and oblige.

Enclosure.

That export of sugar from our country is almost impossible unless a quota is granted to India under the Certified Colonial Preference is an admitted fact. Rates of Duty under United Kingdom Tariff apply as under:—

	Full duty.	Preferential Empire.	Preferential Certified Colonial.
	s. d.	s. d.	s. d.
Sugar of a polarisation exceeding 99°	11 8	5 10	2 4·7
Sugar of a polarisation exceeding 97° but not exceeding 98°	8 7	4 7·7	1 5·8
Sugar of a polarisation exceeding 95° but not exceeding 96°	8 1·6	4 4·8	1 4·8

In India, almost all sugar factories are working on Dutch process. They are manufacturing mainly two kinds of sugar. One is known as Crystal No. 1 which is nearly equal to Dutch Standard No. 25 and/or higher. The other is called Crystal No. 2 which is about Dutch Standard No. 16 and higher. The former has a polarisation above 99° and is commonly termed in Java as "Superior Head Sugar" (S. H. S.). The latter is called "Channel Assortments" and has a polarisation about 98°. Sugar below Dutch Standard No. 16 and over Dutch Standard No. 12 is commonly known as "American Assortments" and have a polarisation about 96°. Very few Indian factories produce the last named quality. It is worthwhile noting here that the usual difference between the inland prices of Crystal No. 1 and Crystal No. 2 is about annas eight per bazar maund. While difference in preferential duty in United Kingdom between the Crystal No. 1 and Crystal No. 2 is about 2s., i.e., about Rs. 1·4 per cwt. One can easily find on simple arithmetical calculation that it is more advantageous and easier to export Crystal No. 1 in preference to Crystal No. 2. Further it should not be forgotten that while exporting Crystal No. 2 we have to

face keener competition of Cuban, Continental and other Empire Raws. Then again, price realised in London at present for Mauritius Crystals (Vesou) is about 12s., whereas for Mauritius Syrup (Siron) it is only 7s. 6d.

At present when Mauritius Crystal are selling on a parity of 12s. per cwt., c.i.f. London and/or Liverpool, Indian sugar, which is equally good as Mauritius in quality and whiteness, can be exported to and sold in United Kingdom markets at same prices if not more, provided we are allowed to export our sugar to United Kingdom Ports, under the "Preferential Certified Colonial", which enjoys a preference of 9s. 4d. over other foreign sugars exceeding 99° polarisation. Under the "Preferential Empire" in United Kingdom Tariff we have only a preference of 5s. 10d. With Empire preference it is well nigh impossible to export our sugar without a very big sacrifice.

	Rs. A. P.
Fair average price per Bengal maund for Indian White Sugar equal in quality to Mauritius Crystals	6 0 0
Less Excise refundable per Bengal maund	1 8 0
	<hr/> 4 8 0
Add average Railway freight from Mills to Port of Shipment per Bengal maund (Calcutta)	0 12 0
	<hr/> 5 4 0
Price converted into per cwt.	7 2 0
Add Steamer freight, insurance and shipping charges	0 15 6
	<hr/> 8 2 3

Exchange at 1s. 6d. 12s. 2½d.

It can be noted from above that even to-day we are very near to an exportable parity for our Indian White Sugar in United Kingdom market. In United Kingdom the Duty is fixed according to polarisation, but this only refers to raw sugar. India can export to-day White Sugar similar to Java White in which case the Preferential Empire Duty is 5s. 10d. per cwt., notwithstanding the polarisation. White Sugar is always charged at 5s. 10d. per cwt. The British Government have made arrangements with some parts of the Empire to give a quota for certified sugar, but India is not one of them. Mauritius exports about 250,000 to 280,000 tons to United Kingdom, and has a quota of about 200,000 tons of "Certified" sugar with lower Import Duty of 2s. 4-7d. per cwt. The quota for "Certified" sugar must be arranged between the Indian and British Governments.

Replies from the Manufacturers of Sugar by the Open-pan System and Khandsars.

(1) *Replies to Questionnaires for Manufacturers of Sugar by the Open-pan System and Khandsars, furnished by Mr. Priya Nath Mitra, Laharia Sarai, Bihar.*

1. We manufacture sugar from rab which we get by crushing cane. We get the cane crushed by crusher by the help of oil engine, juice is converted into rab and then is converted to sugar through centrifugal.

2. We purchase cane direct from our members and cultivators. We deal with growers directly and so we do not pay any commission.

3. We are dealing with growers for the last four years and the average price during the period is at the rate of four annas per maund or Rs. 25 per 100 maunds of cane.

4. Generally there had been a difference of anna one between the price of rate paid by vacuum-pan factory and open-pan factories, viz., if vacuum-pan paid at 5 annas per maund, open-pan paid at 4 annas per maund, though the Government rate was below for the open-pan system.

(b) There is no systematic rate of gur but generally it is sold at Rs. 2 to Rs. 3 per maund.

5. (i) 60 per cent.

(ii) 18 maunds.

(iii) 50 maunds including first and second sugar.

6. We manufacture Khandasar sugar of two qualities called 1st and 2nd but there is very slight difference between the two. We started work in 1934 and it is the fourth season.

Year.	1st.	2nd.	Total.
1933-34 . . . .	...	...	894
1934-35	875	103	978
1935-36	1,260	314	1,574
1936-37	1,676	490	2,166

8. We generally sell in the local markets of Darbhanga district. We directly sell to the shopkeepers and gentlemen of the town.

		Per maund.	
		Rs.	Rs.
9.	1933-34	7	
	1934-35	8	
	1935-36	8 to 6	
	1936-37	6 „ 5	

10. (i) Yes.

(ii) Yes to some extent by those who do not like sugar prepared by using chemical mixture.

(iii) By gentlemen and those who do not like chemical mixture used in Indian Factory sugar.

11. Crushed sugar of Indian factory is replacing our sugar to a great extent.

12. It is on account of Indian factory of vacuum-pan system alone that almost all the sugar mills of open-pan system in the neighbourhood were closed down during the last four years and it cannot stand in competition with the vacuum-pan factories sugar as the former have got cheap production.

13. It has been an additional burden on the open-pan factories when they cannot stand in competition with Indian factories which get more percentage of sugar than open-pan system factories can have.

14. Open-pan system factory cannot produce as much percentage of sugar as vacuum-pan system. In extraction the open-pan system gets about 60 maund juice per 100 maund of cane while vacuum-pan factory gets about 80 per cent. Moreover it does not get good type of crusher to work efficiently and economically all season round to the full capacity of the mill and the quality of sugar is inferior to that of vacuum-pan system as it has not got improved method of clarifying materials for purifying sugar. Further in order to encourage cottage industry like open-pan system in its experimental stage it should be exempted from sugar duties and specially mill started in the interest of members of Co-operative Societies should receive special favour by the Department of Industry and Agriculture by supervising the mill and by giving necessary instruction, protection in the shape of state aid and help during the running season to improve quality and quantity of sugar to enforce cheaper cost of production, and to devise means to make the best use of molasses in order to get better price of it to save the open-pan system mill from loss and ruin.

(2) *Letter, dated the 24th July, 1937, from Mr. Har Sahai Gupta, Shankar Agricultural Farms, Bilari, United Provinces.*

I enclose herewith Replies of the Questionnaire meant for Open-pan system. Besides, I am sending some figures of the cost of production of sugarcane both through intensive cultivation and of a cultivator from whom I obtained them myself and I am sure they are quite reliable. The figures meant for intensive cultivation are based on my personal experience of cultivation of cane in my farms.

We have got one Khandsaries' Association in the district with myself as its Secretary. If some more Khandsaries are needed to appear before the Board, I can arrange the same.

Enclosure.

OPEN-PAN SYSTEM AND KHANDSARS.

1. We make sugar from cane which we grow ourselves, from juice which we purchase from growers of sugarcane and from rab which growers bring to the market for sale and is purchased from them.

We crush our cane with the help of electric power and make rab which is brought to a central place for treatment with centrifugals. Rab is made from the purchase of juice where it is purchased and carted to the central place for centrifugals. Rab is mostly brought for sale to the centrifugal man and it is purchased there. All this rab is spun into white sugar through centrifugals, dried for market and the molasses is boiled into second rab which in its turn is also centrifuged.

The old system of separating molasses from rab by means of piling it in small quantities in bags is not now generally followed. Centrifugals are mostly used for this purpose.

2. We grow our sugarcane in very large quantities. We purchase juice and rab directly from cane-growers. In our case the question of intermediary does not arise but we know that in many cases juice is not purchased directly from the grower but through some intermediary who generally is a Zamindar of the village.

The purchase of juice generally depends on advances and a Khandsari more than often does not want to take the risk of making such advances directly to the grower as it involves a good deal of risk. Hence he tries to find some intermediary and Zamindar is generally the safest man to deal with as he has got some control over his tenants. The Zamindar generally is not required to make advances as his rental dues with the tenants are taken into account and he pays the balance to the tenants on receipt of money from the Khandsari. In this transaction the Zamindar certainly makes some money which varies from place to place and year to year. The following figures for a particular village will give some idea:—

Year.	Per Karda Intermediary purchased by making advances.	Per Karda sold to the Khandsari when the crop was ready.
	Rs.	Rs.
1932-33	29	30
1933-34	20	27
1934-35	18 (due to cheap gur)	31
1935-36	20	30
1936-37	19	26

It will not be out of place to mention here that the intermediary does not only advance money but has to look to many other things also. He

sees that the crop of the tenant is doing well and does not suffer for want of funds. At times he has to pay off the debts that the tenant incurs. In any case there is a great risk in making these advances.

As for the sale of rab there are growing up some intermediaries specially in Mandies where every day transaction in the sale of rab are made and rab is taken from distant villages by the growers. These intermediaries are both to the benefit of the grower and the centrifugal men as they readily purchase rab and pass on to the centrifugal men at their convenience. The grower has not to wait and the centrifugal men gets rab according to his demand. This also gives a little stability to the market and the grower is not always at the mercy of the centrifugal man. The grower has to pay 3 pies per rupee as brokerage and three pies for commission per rupee in Chandausi Mandi.

3. We have no experience of purchasing cane. On the other hand we have experience of selling cane. The following table will show rab and juice prices for the last seven years:—

Year.	Rab per std. md.		Juice per std. md.	
	Rs. a.		As. p.	
1930-31	3	0	9	0
1931-32	2	10	7	9
1932-33	2	10	5	2
1933-34	3	0	5	0
1934-35	3	12	5	2
1935-36	2	11	5	4
1936-37	2	4	5	2

These are the prices of juice when advances are made a year before but for the ready juice the prices may safely be taken at about 15 to 25 per cent. more than these.

4. (a) The prices of cane, juice and rab are effected by the prices obtained for cane supplied to vacuum pan factories.

Generally in the area in which vacuum factory operates, cane is not purchased by open pan factories. If purchases are made, prices generally are the same in both the cases and such a case can only happen when cane prices are very low or the cane is in abundance and the grower wants to part with it at any cost. If the open pan factory has any advantage in the same area, it is of cartage and of having a very close contact with the grower. If of course advances are made cheaper cane may be available but it is so risky. There may be some honourable exceptions in which case juice may be available in such areas at a cheaper rate than obtainable by sale of cane to vacuum pan factories, but these cannot be many cases like this and such cases are found of very old Khandsaries who have been dealing with the growers for a long period. But even in such cases all the growers do not sell their full quantities of sugarcane but only for the amount which they have received in advance. The rest of their crop they sell in the form of cane.

The grower always prefers to sell cane as there is no risk in that. He makes rab only when he sees, it will pay for his extra labour or it is difficult to dispose of cane and rab sells very well in the market. If he sees chances of the sale of cane in the near future, he will prefer to wait but when he once takes to make rab, he goes on with the job as he has got to pay for the rent of the cane mill and pans. Thus the rab prices are effected by the prices available for cane to the extent to which it is possible to obtain the same price for cane through the manufacture of rab but there are so many circumstances which govern it. There is a price at which it will pay a centrifugal man to purchase rab. The cane may be difficult to sell. The grower may like to finish with his crop as soon as possible.

(b) When advances are made for the purchase of sugarcane or juice, high gur prices generally do not effect as the prices are generally fixed at the time of making advances. It may be that at the fag-end of the season, the growers may approach the Khandsari with the request that they may be allowed to make some gur and the Khandsari may feel compelled to allow them as otherwise the growers would do that at their own option. But when sugarcane is purchased without advances, the grower is at liberty to make gur, but this is not the case with juice as there the grower is within control of the Khandsari and is not allowed to make gur though he may sell some of his sugarcane, if the rates are favourable. Thus the gur prices do control the prices of cane or juice but not to an extent to which the prices of cane obtainable by the manufacture of gur are also obtainable through the sale of cane or juice.

The Khandsari is bound by sugar prices and he cannot go beyond a limit. The same rule governs the manufacture of rab. The grower will not make gur, if rab can put more money into his pocket. Hence the prices of rab do vary with the prices of gur but not to a very appreciable extent as the prices of rab are controlled by the prices of sugar. There is generally marginal profit at which the centrifugal man purchases rab but if the gur prices are higher, this marginal profit disappears or is further reduced.

5. (a) 55 to 64 per cent.

(b) Say about 17 or 18 per cent.

(c) Generally 40 per cent. 1st sugar on 1st rab and 25 per cent. 2nd sugar on 2nd rab.

6. We manufacture only two qualities of sugar. First and second sugars. But since the quality of rab is not uniform, it is not possible to manufacture sugar of uniform quality either of first rab or second rab. The following figures will show the amount of sugar produced but they are only estimated figures which to the best of knowledge are very near the correct.

Year.	Quantity in Standard Maunds (Approximate).
1930-31	2,000
1931-32	5,000
1932-33	5,000
1933-34	2,000
1934-35	1,400
1935-36	1,000
1936-37	2,000

7. The cost of manufacture is given in some detail in the Appendix. There has not been much difference in the cost of manufacture of sugar during the last seven years. Of course, with the times labour has become a little dearer but all the same with the same amount of labour output has increased. It used to be usual to manage about 5,000 to 6,000 maunds of cane with one Bel but now about 10,000 maunds of cane is managed with the same Bel. The labour charges have proportionately increased. Then there is change from "Addas" to centrifugals for the curing of rab to white sugar and this has improved the recovery of sugar specially for two reasons: (1) There is much less wastage in the spinning of rab through centrifugals, and (2) fresh molasses is available for second rab resulting not only in better quality of sugar but also in better recovery. Hence more or less the cost of manufacture per 100 maunds of cane is stationary. I am sorry it is not possible for me to find out detailed figures for the last seven years.

8. Our chief markets are Chandausi and Delhi Shahdara. We have got *Arties* at both the places and we send them our sugar. They work on commission basis.

9. It is difficult to answer this question since prices vastly vary according to quality. Then there are other factors which affect the prices. The following is an attempt to give some idea of the first class sugar prices on Dasera Day of each of the following years:—

Year and date.	Price per standard maund.		
	Rs. A. P.		
October, 1927	17	5	4
24th October, 1928	16	8	6
13th October, 1929	14	10	8
20th October, 1930	12	0	0
20th October, 1931	13	5	4
9th October, 1932	10	10	8
28th October, 1933	10	10	0
17th October, 1934	9	5	0
7th October, 1935	9	4	0
25th October, 1936	7	3	0
July, 1937	5	8	0

10. There is no question of khandsar sugar being preferred to gur. There is a distinct market for gur so far as gur for eating purposes is concerned and there is a distinct class of people who take it. Gur in the powder form was mostly used among this class of people on ceremonial occasions but now khandsar sugar is being used in increasing quantities. Owing to its cheapness and easy accessibility, it is also being used directly by this class of people.

11. It is very difficult to say to what extent factory sugar is replacing khandsar sugar but in the face of figures of low production of khandsar sugar, it can safely be concluded that to that extent it is being replaced by the factory sugar. The few points will show reasons of low production of khandsar sugar:—

- (1) Factory sugar is preferred to khandsar sugar for confectionary purposes as the latter requires reboiling before it can be used. The former being clearer is generally used as such.
- (2) There was a certain amount of prejudice in favour of khandsari sugar and that has worn out.
- (3) Factory brown sugar directly competes with the khandsari sugar.
- (4) For direct consumption factory sugar is preferred.
- (5) Khandsari sugar is poor man's sugar. It has very limited sale among higher classes.
- (6) Khandsar sugar has begun to replace gur for use on ceremonial occasions.

12. About 25 per cent. of khandsars have closed down during the last seven years.

13. As I have stated in the Appendix, the excise duty and the increase effected in 1937, have badly told upon the industry. The energy and the intellect of the khandsari is being mostly utilised in providing evasive methods from the excise duty than to make the industry more efficient.

14. Please refer to the Appendix.

APPENDIX.

KHANDSAR INDUSTRY.

Much water has underflowed the bridge since the last sugar Tariff Board reported on the sugar industry in 1931. The whole history of the industry if written, will read like a romance. The development has been phenomenal. This shows what protection can do for an industry in this country. India producing white sugar to the extent of her consumption within the duration of a few years is not a mean achievement. In 1931-32, the total production of white sugar was 474,120 tons and in 1936-37 it has gone up to 1,100,000 tons. While the production of factory sugar has increased from 228,120 tons to 1,100,000 tons, the production of khandsar sugar has gone down from 250,000 tons to 100,000 tons. This shows that step-motherly treatment is meted out to an industry which could stand all weather and has been living its life since times immemorial. Factory industry is considered main factor of the sugar industry and khandsar industry is being brushed aside as a wasteful method. But our grievance is that no chance is given to the industry to improve its ways and put it on more efficient footing. On the other hand weak as its position is, it has been made weaker by the excise duty. Any concern where white sugar is manufactured engaging more than 19 men in any form is declared a factory and is liable to pay excise duty to the extent of Re. 1 per cwt. Thus that bugbear of excise duty is always haunting every manufacturer and under the circumstances no effort to make the industry more efficient is possible. The industry has come to stay in the following forms:—

- (1) The grower crushes his cane by bullock power cane mill, makes rab, crystalises it in earthen containers (kalsies), takes to the centrifugal man who purchases it according to its quality.

The centrifugal man then spins it through into white sugar and makes second sugar himself by boiling molasses into second rab. Since the centrifugal man under the circumstances engages below 19 men, the sugar escapes excise duty. It is not expected that the industry in this form can be made more efficient. The centrifugal man purchases rab at a rate at which he thinks it will just pay him. All that he has to do is to spin and put the sugar on to the market. He only acts as a middle man. As between the small grower who can neither engage a good boiler (Rab man) and nor can he put up a big Bel, and the centrifugal man who just wants the transaction to pay because he cannot stand any risk, there is no impetus to make the industry more efficient. Nevertheless, last cane season this industry has been found to pay the grower more to make rab than to make gur. While gur was selling at Rs. 1-8 per maund to Rs. 2 per maund rab was selling between Rs. 2-2 to Rs. 2-4 per maund. Besides, while the recovery of gur is 10 per cent. that of rab is 12 per cent. to cane. This is due to thinner consistency to which rab is boiled.

The crushing (for 1,500 maunds of cane for which generally a cane mill is engaged) and rab making charges:—

	Rs.
(a) Hire charges of the cane mill	20
(b) Hire charges of three small pans	15
(c) Cost of defecants	5
(d) 300 Kalsies	10
	<hr/>
	50

Two items are left out here—labour and bullock power—since these two items are common whether a grower makes rab or gur. Besides, a grower does not ordinarily engage any labour—the whole family or a group of growers working together and the bullock power is there with him in any

case. Even if he sells his cane, the whole family is engaged and the bullock power is used in carting cane.

Generally recovery of rab is 12 per cent. Hence he gets 180 maunds of rab, and the manufacturing charges are about 4 annas 6 pies on rab and 8½ maunds of cane go to make one maund of rab. Taking the sale price of rab at Rs. 2-4 per maund, the price of cane works out at 3 annas 9 pies or 3 annas 3 pies in any case.

It is difficult to work out recovery of sugar in such a case because centrifugal man does the whole job at a very low profit and then the quality of rab is very uncertain. However, the figures can be calculated like this. The recovery of sugar on rab varies very widely. It is between 25 to 45 per cent. But average rab yields a recovery of 40 per cent. first sugar though the quality of sugar is not good or generally below the average but it sells quite all right in the local markets as it has begun to be purchased for ceremonial purposes by masses. The recovery of sugar is generally about 6.

The following figures have been collected after a good deal of discussion with the local dealers and I feel they are correct. Since most of these centrifugal men do not generally keep any accounts or probably are shy to give any, it is not possible to give figures for the past years. Except for the prices of sugar I do not think there has been much difference in the cost of manufacture.

In the year 1936-37, the average price of rab has been Rs. 2 per impl. maund. Since the price of gur has been very low, the rab has been selling in competition with that. Then sugar prices have to be taken into consideration which have been showing tendency to fall.

Recovery of sugar varied from 35 per cent. to 40 per cent. of first sugar on the rab purchased. Hence 40 can be taken as an average figure. Hence 1 maund of rab yields 16 seers of sugar. Turning of molasses into 2nd rab costs at the rate of 1 anna per maund on molasses boiled giving an yield of 80 per cent. 2nd rab. Hence the following figures:—

	Rs. A.
(1) Price of 100 maund of rab at Rs. 2	200 0
(2) Centrifuging charges of 40 maunds of sugar at 4 annas per maund	10 0
(3) Drying charges at 1 anna per maund	2 8
(4) Turning 60 maunds of molasses into 2nd rab at 1 anna per maund say yielding 48 maunds of 2nd rab	4 0
(5) Centrifuging of 48 maunds of rab yielding 25 per cent. or 12 maunds of 2nd sugar at 4 As. per maund	3 0
(6) Drying charges at 1 anna per maund	0 12
(7) Potting of 2nd rab will need about 150 kalsies costing	5 0
Total	225 4
Commission and other charges	2 12
Grand Total	228 0

Total yield of sugar:—

	Mds.
1st Sugar	40
2nd Sugar	12

52 at Rs. 4-8 a maund.

The average price of this kind of sugar is Rs. 4-8 a maund. The total receipts are Rs. 234 for sugar and Re. 1-8 for molasses if at all. Hence the profits: Rs. 7-8 per 100 maunds of rab purchased. The details of centrifugal charges are as follows:—

The cost of one 18" centrifugal with an electric motor and all fittings Rs. 600. It generally works for about 100 days giving an yield of about 1,500 maunds of sugar in the season. The following labour is engaged—

	Rs.
(1) One centrifugal man for 4 months at Rs. 10 per month	40
(2) Three labourers at 4 As. a day for 100 days	75
(3) Other expenses	10
	<hr/>
	125
	<hr/>

or 1 anna 4 pies per maund on sugar.

Electric power consumed generally is one unit per maund on sugar as the sugar is not of good quality or 1 anna 6 pies per maund on sugar.

Depreciation at 10 per cent. on Rs. 600=Rs. 60. Hence 8 pies per maund on sugar.

Totals:—

	Per maund of sugar.
	As. p.
Labour	1 4
Electric charges	1 6
Depreciation	0 8
	<hr/>
Total	3 6
	<hr/>

In the above figures nothing has been added for rent of the house, interest of the money invested, repairs of the machinery and other incidental charges, hence 4 As. a maund for the centrifuging charges is calculated.

The above figures give a recovery of 6·2 per cent. of both sugar on 100 maunds of cane.

(2) In the second case, the grower sells juice to the khandsari who puts up a Rohilkhand Bel to make rab. The khandsari engages trained labour and the quality of rab is generally uniform. The rab is stored either in kalsies or tins and carted generally to the residence of the khandsari where he has got a centrifugal to spin the rab into white sugar, one molasses bel to make 2nd rab and other necessary things. A khandsari may have one or more Bels working at various centres but rab of all of them is carted to his residence. The cartage charges vary according to distance but one anna per maund can be taken as an average figure. In many cases some other charges have also to be paid specially when khandsari happens to reside within Municipal area. Apart from these charges, some wastage is unavoidable. If the containers are earthen pots, they break in transit. If they are tins, their mouth is sufficiently wide open to allow escapage of rab. However wastage does occur and under the circumstances, it is evitable. The industry cannot stand any costly container and then the right quality of graining in them will be a matter of experiment.

The average price paid by the Khandsari last season is Rs. 20 per Karda. Karda means 50 maunds of juice by 100 rupees seer and if the average extraction of bullock cane mills is taken at 62·5 per cent. of juice on cane, then one karda means 100 maunds of cane. Hence price paid is

Rs. 20 per impl. maund of cane. Hence the price of cane works out at 3 annas 3 pies. From this figure crushing charges have to be reduced. Hence the price of cane paid is 3 annas per maund in the field.

In this case too there is so much of wastage of labour and material. Besides no permanent improvement can be effected either in the Bel or building or containers as everything is of temporary nature meant to serve the purpose for the season. One khandsari may purchase juice in a village one season and for the next in another village. Some figures have already been given in No. 1 and other relevant figures are given below:—

A khandsari engages the following labour at one Bel generally on contract system for the season:—

	Rs.	Rs. a.
(1) Three Bel men	120	...
(2) Five Jhonkas	75	...
(3) Clerk one	35	...
(4) Cook one	30	...
(5) Watchman one	30	...

Total	290	290 0
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(6) Defecants	35	35 0
(7) Kalsies	120	120 0
(8) Other sundry expenses	15	15 0
(9) Depreciation of pans	25	25 0

(A Bel like this deal with at the most 10,000 maunds of cane giving an yield of 1,200 maunds of rab. This will at the most yield 6½ per cent. of sugar on cane or 650 maunds of both 1st and 2nd sugar.)

Hence—

(10) Carting of 1,200 maunds of rab at 1 anna per maund . . . . .	...	75 0
(11) Cost of centrifuging at 3½ As. per md. . . . .	...	142 0
(12) Drying charges at 1 anna per maund . . . . .	...	40 10
(13) Charges of making 2nd rab . . . . .	...	45 0
(14) Other charges . . . . .	...	15 0
(15) Cartage, Chaudausi and Commission . . . . .	...	150 0
(16) Cost of juice at Rs. 20 . . . . .	...	2,000 0
Total . . . . .	...	2,952 10
or say . . . . .	...	2,950 0

Sale price of 650 maunds of sugar at Rs. 5 a maund=Rs. 3,250.

Net profit Rs. 300 or 7 annas 3 pies per maund on sugar.

(3) In the third case a khandsari instead of purchasing from the grower, purchases cane and does his own crushing generally through power cane

mills. He then makes rab and carts it to a central place generally his residence where centrifugals are fixed, and other connected operations are done as explained in No. 2. Such concerns have not been a success as besides purchasing cane in competition with central sugar factories, other economies could not be effected. I know of one or two concerns which have failed. The conditions as regards availability of cane are changing now and in future it is possible some attempts will again be made.

(4) The fourth form in which the industry exists has not expanded. There are only two or three concerns to my knowledge and they came into existence when there was no excise duty. These concerns are more or less self-sufficient factories with machinery for all the operations set up at one place. They purchase cane, crush it, make rab, spin it and make second rab and second sugar under one shed. But I know of late these concerns have made some changes in the premises to avoid excise duty. The impetus to make the industry more efficient is absent because of this excise duty. If at all, only those improvements are made which do not admit of excise duty.

Under the circumstances, it will not be an undue demand to ask for a plant which can admit of all necessary improvements on the smallest scale. Any one aspiring to work on a bigger scale may be required to pay excise duty. The smallest economic plant which I can conceive of will not engage less than 50 heads and will consist of the following machinery:—

- (1) One cane mill of 40 to 50 maunds per hour capacity.
- (2) Two Rohilkhund Bels.
- (3) One 18" centrifugal.
- (4) One molasses bel.
- (5) Three Pattas.

The following will be needed—

(a) Cane Mill:—

(1) Weighman	2
(2) Cane carriers	2
(3) Feeders	4
(4) Bagasse boy	2
(5) Munshi	1
(6) Mistri	1
	—
	12

(b) Two Bels:—

(1) Head boiler	1
(2) Karigar	2
(3) Nikhara	4
(4) Jhonkas	12
(5) Munshi	1
	—
	20

(c) Centrifugal:—

(1) Rab men	4
(2) Centrifugal men	2
(3) Oil man	1
(4) Waterman	1
	—
	8

(d) Molasses Bel:—

(1) Jhonka	2
(2) Karigar	1
(3) For aeration	2
(4) Extra man	1
	<hr/>
	6

(e) Other labour:—

(1) Watchman	2
(2) Clerk	1
(3) Sweeper	1
	<hr/>
	4
	<hr/>
	50

The following economy can be effected in a plant like this:—

- (1) Small cement tanks can be used both for the graining of first rab and second rab. Earthen containers cost Rs. 3-8 per cent. and for rab 100 maunds of cane some 25 kalsies are needed or say an economy of about 12 annas per 100 maunds of cane. Besides some loss of rab occurs in the uses of kalsies. A good deal of this loss can be avoided and side by side quality can be improved as when these earthen containers are broken to remove the contents, some pieces get into the rab and subsequently pass into sugar as they are difficult to pick out. But when rab is sold to the centrifugal men, the use of these earthen containers is cheaper and more convenient as there is no difficulty about returning or paying for them. Tins are also used as containers but even their use is being discarded by those who can manage all the operations at one place as they too cannot generally stand more than two seasons.
- (2) There is saving of cartage. Varying amounts have to be paid in carrying rab to the place of centrifugal depending on the distance cartage has to be done.
- (3) Wastage mostly occurs in transferring things from place to place and if things are centralised at one place, most of the wastage can be avoided and so many improvements can be effected which go to make a self-sufficient unit.
- (4) If all the operations from the purchase of cane to the sale of sugar are centralised at one place, it goes without saying that it will have many advantages which cannot be had in dividing one unit into many a one. A good boiler can be engaged to look to the efficient boiling of both juice and molasses and better supervision can be effected. At present there is tendency to engage cheap men and that results in so much theft of juice, rab, increase in weight of juice and favours. Good many of these evils can be kept under control.

At present the industry is just pulling on. There is no impetus to put the industry on a better footing. No improvements are being effected because of the fear of excise duty. We only wish that for this particular industry a limit of 50 men should be allowed instead of 19. That is, where white sugar is manufactured with the help of 50 men, it should not be declared a factory. If more than 50 men are engaged, it should be declared a factory. The only change that we want in the factory rules for this particular section of the industry is that the limit of 19 men should be raised to 50 before the concern is declared a factory.

Small grower's figures of cane cultivation.—The following figures have been obtained from a grower, Bahadur Singh, who kept all the accounts in detail as he had two more partners:—

Area:—

Plant crop	16 bighas or 2½ acres.
Ratoon crop	10 bighas or 1½ acres.
Total	4 acres.

(1) *Cultivation:—*

Rs. A.

The plant area was only ploughed.	
They had two pairs of bullocks and one ploughing was done within two days. 15 ploughings were done.	
The upkeep of the bullocks cost them Re. 1 per day and their labour, all the three partners working mean another rupee per day. They were engaged on the field for 30 days.	
Hence Rs. 30 for bullocks and Rs. 30 for their labour	60 0

(2) *Sowing:—*

	Rs. A.	
Labour wages paid	5 0	...
Seed purchased	14 0	...
Wages of partners	1 0	...
For bullocks	4 0	...
	<hr/>	24 0

(3) *Manures:—*

Farm-yard	12 0	...
Ammonium sulphate	5 0	...
Govet fertiliser	8 8	...
	<hr/>	25 8
(Govet for ratoon crop 2 bags) . . . . .	...	8 8

(4) *Irrigation:—*

Paid to irrigation branch for 4 bighas 4 waterings and rest along with ratoon 2 waterings	56 3
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(5) *Hoeing:—*

8 Bighas got 6 hoeings	}	...	46 0
8 Bighas got 3 hoeings			
Ratoon got 2 hoeings			

(6) *Cutting:—*

For 4 bighas paid	8 0	...
For the rest paid	7 0	...
	<hr/>	15 0

(The partners worked besides).

(7) *Rent:—*

Paid to zamindar . . . . .	...	62 10
Total . . . . .	...	<hr/>297 13

	Receipts.	Expenses.
	Rs. A.	Rs. A. P.
The above crop was disposed of as follows:—		
(1) The ratoon cane was sold for (316 mds.) .	94 0	...
(2) Cartage not paid but incurred . . .	...	5 0 0
(3) Hired cane mill and 3 pans . . .	...	33 0 0
(4) Paid boiler for 1 month only and in the meantime learned the job . . .	...	12 0 0
(5) Paid other labour . . . . .	...	22 15 6
Received by the sale of:—		
(6) Gur	90 0	...
(7) Rab (60 kalsies)	70 8	...
(8) Rab (40 kalsies)	44 0	...
(9) Sold cane again	85 0	...
Total	383 8	72 15 6

It may be mentioned here that in the above total of Expenditure side nothing has been shown for cartage, wages of the partners who worked for over two months, defecants, etc.—

	Rs. A.	Rs. A.
The total receipts are	383 8	...
Total expenditure . . . . .	...	say 73 0
Cost of cultivation . . . . .	...	297 13
		370 13
Total receipts and expenditure	383 8	370 13
Profit	12 11	...

If other items of expenditure are taken into account, it will show a clear loss of over Rs. 25. Now the following can be calculated:—

- (1) Gur was sold for Rs. 90 at the rate of 2 seers local weight for 2 annas 9 pies. Hence the amount of gur is 26 maunds 7 seers local weight. 100 maunds (standard) cane yield 8 maunds of local weight gur. Hence the total amount of cane is 326 standard maunds.
- (2) 100 kalsies full rab were sold containing 40 maunds of rab or 50 maunds (standard) rab. Hence the amount of cane is 416 maunds.
- (3) Cane was sold for Rs. 85 again at the rate of 2 annas 9 pies per standard maund. Hence the quantity of cane is 495 standard maunds.
- (4) The quantity of ratoon cane sold is 316 standard maunds. The total quantity of cane is 1,553 standard maunds. The total cost of production is say Rs. 300 exclusive of cartage. Hence the cost of production per maund of cane is 3 annas 1-2 pies. Cost of production per acre is Rs. 75. Produce per acre is 388 standard maunds or say 390 standard maunds.

(3) *Answers to Questions by Khan Bahadur Syed Mohammad Hadi, M.R.A.C. (Cirencester), M.R.Ag.S. (London), Adviser on Open Pan Indian Sugar, United Provinces.*

I. I do not own a factory of my own but have been engaged for many years in research work on the indigenous sugar industry, and have carefully studied the various systems of producing white sugar (khand) direct from cane and have written a number of books, pamphlets and notes on the method of cultivation of sugarcane, old and improved, and manufacture of sugar. My aim has been throughout to obtain a high outturn of cane from different varieties of cane by improved methods of cultivation and high grade I and II indigenous sugar from the cane with the maximum yield of sugar possible. For the last six years I have been advising manufacturers and helping them in working small factories with and without mechanical power. I manufacture sugar directly from cane or from juice, but do not advise my constituents to make sugar from the rab made on the indigenous furnace (bel) commonly called "bel rab" or from the rab manufactured by the cultivators at their homesteads in single pan or a system of double pans, such rab being technically known as "sayer rab". The reason is that the rab made either of the two above systems neither yields the maximum possible outturn of sugar nor produces the best quality. Speaking briefly my system of manufacture is as follows:—

Where cane is available, it is crushed by bullock mills or by mechanical power to obtain juice. Where juice is available from the cultivators it is purchased from them. In either case it is clarified with defecants and boiled as fresh as possible and with the utmost rapidity in a system of flat-bottomed iron pans (galvanised iron one preferred) and concentrated in small bowl-shaped thick-bottomed iron pans, the final consistency of the rab being attained in the small bowl-shaped pan known as the parchhiya which is removed from the furnace as soon as the required consistency has been reached, and the contents are emptied in an earthen tub which is stirred with ladles and dories for airing the rab (osa dera). The hot parchhiya removed from the furnace is replaced by a cool one into which clarified liquor is transferred for concentration. These processes which go on continually throughout the working day minimise the charring of rab: the resulting product is a light coloured rab of very superior quality, which is stored in tins or suitable earthen vessels. After a few days when the rab has matured it is centrifuged to yield Sugar I which is washed with water by a syringe to remove the last traces of adhering molasses. The sugar is then crushed under feet in the sun to be further bleached and is then bagged. The molasses eliminated from the rab is re-boiled on a system of three pans to a certain consistency and on becoming fit for curing is passed through the centrifugal to obtain Sugar II which is dried in the sun but not crushed under feet, the quality being about as good as that of Sugar I. The final molasses is a very clear material fit for making sherbet and sweetmeats and is also purchased by the manufacturer of the Indian tobacco in preference to the final molasses of the vacuum pan factories.

II. Arrangement is made direct with the cultivators for the supply of cane. In the tracts where it is customary for the cultivator to sell juice instead of cane the manufacturer purchases juice from the cultivators who set up the mills close to the boiling plant. Since the marked fall in the prices of gur which rendered the gurmaking business unremunerative, the course is being adopted in cane selling tracts by the cultivators to sell juice where the manufacturer cannot afford to set up his own crushing plant. No intermediary is employed for procuring cane or juice.

III. In the last season (1936-37) the cultivators of certain villages in the neighbourhood of Zamarrudganj (Dist. Fyzabad) sold their juice to a manufacturer at 5 As. 6 pies per maund. In previous years those of Basti

Dist. Lucknow, supplied juice to the Co-operative Department willingly at 6 As. per maund.

IV. (a) For the first two years of the establishment of a vacuum pan factory the cultivators of the villages within the reach of such factories will not sell their cane to open pan factories at a lower rate than was fixed by the Government for the vacuum pan factories. The rule under which Government authorised open pan factories to purchase cane at $\frac{1}{3}$ ds of the maximum price fixed for the vacuum pan factories did not benefit the open pan manufacturers, to the extent intended by the Government.

(b) When the prices of gur began to fall in 1936 and the vacuum pan factories could get more cane in their own neighbourhood than before, the cultivators situated at a distance from the vacuum pan factories were obliged to sell their cane to open pan factories at lower prices than they would have otherwise done. In 1937 matters came to this pitch that the cultivators supplied cane from As. 3 to As. 2-10 per maund and would have been glad to get rid of their crops even at 2 As. per maund but the owners of the open pan factories were not allowed to purchase cane at such a low rate. Under these circumstances it is said that a considerable area under sugarcane close to the banks of the river Gogra could not be used at all. In parts of Sultanpur the losses in making gur were found to be so great, that the cultivators fed their cattle on cane crops, ordinary fodder being scarce in 1936-37.

V. At Zamarrudganj.—60 per cent. with Massey's 3 roller mill.

At Akbarpur.—63 to 65 per cent. with Massey's £5 roller mill.

With bullock mills an average extraction of 64 per cent. is possible but the bullocks being weak the cultivator keeps the rollers a bit loose and contents himself with an extraction of 61 or 62 per cent. Assuming the average extraction to be 63 per cent. the amount of rab manufactured from 63 maunds of juice varies from 12 to 13 maunds representing from 100 maunds of cane according to the stage of season and the richness of cane in sucrose. The total amount of sugar obtained from 100 maunds of rab, provided it is boiled in the system described in answer to question I, varies from 56 to 57 maunds, of which about 45 or 46 maunds is Sugar I.

VI. I make two kinds of sugar (I and II). For the yields see Answer V.

VIII. The chief market for the Zamarrudganj factory is Sultanpur town, where all the produce is sold. At Akbarpur purchasers come from the neighbourhood and buy the sugar; part is sold in Partabgarh.

X. Preferred to vacuum pan sugar for eating purposes, such as with "puries", "dahee" and culinary purposes in villages, also for making sherbets and sweetening milk. It is preferred to gur on ceremonial occasions, by those Hindoos who can afford to pay for the sugar which is now as cheap as gur used to be some years back, but the vacuum made sugar is not yet a favourite article of food in the villages. Indeed the orthodox Hindoos specially the Brahmins and the Agarwals and Jains still avoid vacuum pan sugar and prefer open pan khand.

XI. Has replaced the open pan sugar entirely with the confectioner especially in towns and cities for the reason that he avoids the trouble of clarifying the open pan sugar before it can be used for making the sweets.

XII. All factories working with mechanical power have closed down in 1936 because of the competition, except one at Zamarrudganj which owes its existence to the fact that the Co-operative Department has leased the machinery to private manufacturers at a rent which does not cover even half the depreciation. Another factory with mechanical power is struggling for existence at Kanakpur because it can get very cheap labour and cane and sells all its produce in the neighbouring villages at prices which may be considered good in these days.

XIII. (i) The Sugar Excise Duty of 1934 was an unbearable burden on mechanically worked open-pan factories.

(ii) The increase in the duty has compelled them to close down.

XIV. The main difficulties of the open pan are:—

- (i) that the extraction of juice is usually poor.
- (ii) that the prices of cane are not steady, the rule authorising the manufacturers to buy cane at $\frac{1}{3}$ rd of the price fixed by Government for the vacuum pan factories is practically impossible in the neighbourhood of the vacuum pan factories.
- (iii) the Excise duty is intolerable.
- (iv) there is no effective arrangement for marketing either sugar or the molasses.

I have to make the following suggestions:—

- (1) In the first place it is strongly urged that all indigenous sugar may be entirely exempted from Excise duty, so that batteries of small centrifugals workable by mechanical power could in future be installed where necessary in cane-growing and rab-producing villages, or at least the duty may be reduced to a nominal figure, say one anna per maund of sugar and that too merely for keeping the factories under control.
- (2) The existing factories workable by mechanical power should *in any case* be entirely exempted from the duty for a period of the next five years to give them a chance of recovering the losses incurred and avoiding the loss which they would now incur due to their inability to find purchasers for their machinery.
- (3) While retaining for the zones, to be fixed for the vacuum pan factories, the existing rule which authorises the open pan factories to purchase cane for their use at $\frac{1}{3}$ rd of the minimum price fixed for the vacuum pan factories, the manufacturers outside these zones may be allowed to buy the cane with the consent of the grower at not less than As. 3 per maund. In these zones the surplus cane not wanted by the vacuum pan factories may be allowed to be purchased for open-pan sugar making or rab-making at not less than As. 3 per maund.
- (4) Until the prices of gur rise to the normal level, the manufacture of gur even by the best improved method is not likely to be a profitable concern. Considering that by far the greater part of the cane area (said to be 75 per cent.) has to be utilised for purpose other than manufacture of vacuum pan sugar, it is obviously desirable that indigenous white sugar which brings in a fair monetary return on the investment, even under the existing conditions, may be made instead of gur where it is possible or convenient to do so. At any rate the Government must not discourage the manufacture of white sugar in the villages. On the other hand it should help open pan manufacturer at least at one or two places by lending hand or small power centrifugals to enable them to compare the relative profit or losses of gur-making and sugar-making. If sugar-making is depreciated it will be found that no method of improvement in boiling the gur will appeal to the grower as long as the present prices of gur continue. Sugar-making will however be still profitable and the best means of utilising the cane area where there are no vacuum pan factories. What I mean particularly to urge is that the cultivator should certainly be shown by practical demonstrations the method of producing gur of the finest quality but if he finds that the improved gur does not bring in an adequate return a centrifugal may be lent to him as a demonstrative measure to enable him to see whether sugar-making will not be a more profitable plan for him to adopt. He might then make rab instead of gur and the small local

capitalist who can afford to set up one or more centrifugals may readily purchase all the rab produced in the village to extract sugar from it.

- (6) Although the individual cultivator or manufacturer who is in a position to turn out say 10 or 12 maunds of rab may be able to work it off into white sugar (khand) using a hand centrifugal it is believed that when several such bels are working in a group of villages the capitalist will come forward to buy most of the rab, so produced and install a battery of small centrifugals, driven by mechanical power, to obtain at the least cost a higher quality of sugar than the hand centrifugal is capable of yielding. In such cases the capitalist will need exemption from Excise Duty or else his business will not be profitable and the rab-making business too will then become as unremunerative as gur-making business is at present.
- (7) If the open pan factories are exempted from duty a power crusher having more efficient mechanical power, say one with seven rollers, may be introduced in the indigenous industry in place of 5 roller mills to obtain a higher extraction than 65 per cent. and get a corresponding increase in the yield of sugar. Large cane areas cannot be economically dealt with except by mechanical power. Any improvement leading to the attainment of higher extraction of juice whether by mechanical or cattle power would be most welcome. The greatest disadvantage of the open-pan system is the low extraction of juice. Given equal extraction the percentage of sugar extracted by the open pan system will not be very much below that obtained by the vacuum pan system, though the quality will, of course, never be equally good.
- (8) In addition to making the first and second sugars a form of brown or pale sugar with strong but small crystals and identical with the muscavado sugar may be produced in the villages as was recommended by the Indian Sugar Committee in their report published in 1921. This material may be used by refineries for refining if they find fit for the purpose, otherwise it may be used for producing the crushed sugar known as Bura which is highly appreciated by villagers and it would be as cheap if not cheaper than the lowest grade of open pan sugar and will be preferred to the finest eating gur.
- (9) Government should spend a suitable amount annually for two or three years towards introducing the miniature bel in villages and training villagers in the art of boiling, and making the right furnaces.
- (10) With increasing area of sugarcane and the need for greater activity in production of raw sugars it is highly desirable that India may be allowed as soon as possible to export sugar to other countries which do not manufacture sugar. Considerable stress has been laid on the point by the Sugar Merchants Association and I am in full agreement with the views they have expressed.

(4) *Answer to Questionnaire for the manufacturer of Sugar by the open pan system and khandasars, furnished by Mr. N. M. Kajamean Rowther, Palakurāi, Trichinopoly.*

I give below replies to the questionnaire regarding open pan sugar manufacture enclosed with No. C196/37, dated the 3rd June, 1937, of the Director of Agriculture, I very much regret the delay in responding to the call, and this was mostly due to the time taken in closing up the work connected

with the sugar boiling of the current season and the necessity of placing before you the results of experience up-to-date.

2. This year is practically the first season when I have seriously converted all the canes grown in my fields into Boora Sugar. During the last two previous years, a study of the process has been made with a view to evolve a practical and thorough going method, consistent with the economy. In doing so, I had to employ alternative methods even during the current year, though the outlook had been always ensure complete recovery within a month or two after the closure of the cane season. The process of refining is simple and consequently crude. The juice, as soon as it leaves the power crusher, is boiled in open pan and when the temperature of the juice reaches 113° to 115° C. the liquor is decanted into Mud pots and stored for some days to crystallize. Of course, in boiling the juice defecants commonly used in the country, lime water and Bendai juice would be added. Later 3 or 4 small cloth bags, containing each about $\frac{1}{4}$ lb. of powder of Phosphatic nodules would be left in the boiling pan and it was observed that the liquor would clear out more rapidly and effectively. In the previous years activated carbon medium was sparingly used and having found that the refining process would take considerable time, activated carbon was abundantly employed during the year. In doing so, the boiled juice (when at a temperature of 102° C.) would be passed through a sand bed and then through a deep stratum of activated carbon (paddy husk). The filtrate would be boiled immediately after it comes out of the carbon filter till the liquor reaches a temperature of 113° to 115° C. and transferred to earthenware pots for crystallization. After about a fortnight or two, the rab would be transferred to gunny bags to press out all the liquor and thereafter to bamboo plated baskets. The rab in the baskets will be cured with green moss from tanks in order to drive out traces of molasses adhering to the crystals. The stock in the basket will be scraped in layers of 2 or 3 inches from the top when the curing effect of the moss has removed the non-sugars which drip out through the bamboo plait in the form of liquor. The process takes about a month for completely curing the contents of the basket. Of course, half a dozen mossaing will have to be done for completing the further curing in the basket. This cured stuff will be sun-dried, converted into a mealy substance and stored in gunnies and then to be boiled further from making the material marketable or consumable. In doing so, about 70 lbs. of this cured material is dissolved in about 4 times its weight of water, filtered and boiled again to form a thick syrup. When the syrup reaches a temperature of about 120° C., the striking point appears to be satisfactory for yielding a soft stuff. In boiling the moss cured rab further precaution is taken to float up non-sugars by adding about two annas worth of skimmed milk (cow's milk appears to have better effect than buffalo's milk) for every charge of about 70 lbs. About two lbs. of non-sugars usually float up in the surface of the boiling liquor and all the "floatings" will have to be removed before the syrup reaches a temperature of say 102° or 103° C. As soon as the syrup reaches a temperature of 120° C, the boiling pan will be removed from the oven and about 4 or 5 workmen will be vigorously rubbing the product with flat wooden boards till the whole mass attains a mealy condition before the temperature falls down to 45° to 50° C. Utmost vigilance is required in treating the boil in order to secure a soft mealy powder.

2. The canes dealt with by me were all grown in my own fields, and I have been incurring actual filling and transport charges as would fall to the lot of any cane grower.

3. For purposes of ascertaining data for manufacture a price of Rs. 6-10 per ton of cane has been assumed as this amount represents the actual cost to me per ton of cane grown in my fields, without allowing any return to my landed property.

5. Extraction of juice has been noted to be 60.1 per cent. for Co. 231 and somewhat less for Co. 213 and Co. 285. The boiling out of this 60.1

per cent. after passing through sand and carbon filter yielded 20·3 per cent. of juice.

The quantity of sugar got out of 100 maunds of potted rab was only 58·6 maunds and it is expected that in future years considerable improvement is likely by avoiding wastages in drippings. As this year has been practically the first year when the process had taken some shape and no adequate arrangements could be devised to cut down wastages, pilferings and animal pest (monkeys, squirrels, rats, etc.) optimum results could not be achieved and recorded.

6. Last year about 3 tons of sugar was manufactured without resorting to carbon filtration and it took several months to complete the process of curing but during the current year, carbon filtration was resorted to for the simple purpose of hastening up recovery. The amount of boora sugar manufactured was only about 6 tons up-to-date though a few cwts. may still remain to be recovered from the re-crystalised second rab.

Cost of manufacture of Boora Sugar for one acre of canes (Co. 281) for the working season 1936-37.

7. 1 acre=555½ standard maund of canes—

	Per cent.
Rab to weight of canes=	12·2
First sugar to weight of rab=	51·2
Second sugar to weight of rab=	7·4
Total of sugar to weight of rab=	58·6
Total of sugar to weight of canes=	7·15

Rab boiling out of 20·4 tons of cane grown in one acre—

	Rs. A. P.
Cost of 555½ Maunds of canes at As. 3-10½ per maund	135 2 0
Cost of Transport of canes from field to work-spot at 2 carts at Re. 1 each per day and 2 men at As. 6 each per day for 9 days	24 12 0
Labour for cane cutting at 9 females per day at 2½ As. each per day for 9 days	13 14 9
Labour for cane milling at 1 man per day As. 4-3 per day and 2 boys at As. 2-3 each per day for 9 days	4 14 9

Defecants—

57 lbs. of lime part at 1 pie each lb.	0 4 9
17 lbs. of phosphatic nodule powder at 3 pies per lb.	0 4 3
270 lbs. of activated carbon at As. 2-1 per lb.	35 2 6
6½ measures (Madras) of skimmed milk at 4 measures per rupee	1 11 0
5 yards of cloth for filtering at As. 3-6 per yard	1 1 6
Labour for rab boiling at 7 men per day at an average wage of As. 5-3 each per day for 9 days	20 10 9
Yield of rab from 555½ Maunds of canes at 12·2 per cent. 68·1 Maunds.	

Rs. A. P.

Mossing—

112 earthen pots of storing 68.1 maunds of rab at 1 anna each and assuming the pots to be serviceable for 3 seasons	2 5 4
Labour for stirring the potted rab and transferring the same to gunny bags by one man at As. 4 per day for 10 days	2 8 0
7 doz. bamboo baskets at Rs. 2-10 per doz. for placing semi-refined rab for moss curing, assuming the baskets to be serviceable for 3 seasons	6 2 0
24 bags of moss at As. 2-6 each bag	3 12 0
Labour for moss curing by 1 man and 1 boy for 1 month their pay being Rs. 9 and Rs. 6-8 per mensem respectively	15 8 0
Grinding charges for moss cured rab by two men for two days at As. 4 each per day	1 0 0

First sugar boiling—

1 lb. of pure Hydrochloric acid for water softening	0 8 0
24 Madras measures of skimmed milk at 4 measures per rupee	6 0 0
6 cwts. of firewood at Rs. 7-8 per ton	2 4 0
Labour for sugar boiling at 6 men per day at As. 5-3 each per day for 6 days	11 13 0

Second Sugar—

Labour for boiling second rab at 6 men per day at As. 5-3 each per day for two days	3 15 0
Labour for semi-refinement of rab (Putting in gunny bags and pressing out molasses by 1 man for two days at As. 4 per day)	0 8 0
6 Bags of moss at As. 2-6 each bag	0 15 0
Labour for moss curing for 15 days by one boy whose pay is Rs. 6-8 per mensem	3 4 0
1½ Madras measures for skimmed milk at 4 Maunds a rupee	0 6 0
20 lbs. of Activated carbon at As. 2-1 each lb.	2 9 8
1 cwt. of firewood at Rs. 7-8 per ton	0 6 0
Labour for sugar boiling by 4 men for 1 day at As. 5-3 each per day	1 5 0

 302 15 3

Yield of 599 lbs. molasses at 3 pies each lb.	9 5 9
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 293 9 6

26 gunny bags at As. 4 each and 26 cloth bags at As. 2 each for packing sugar	9 12 0
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 303 5 6

	Mds.
Yield of 1st sugar from 68.1 Maunds rab at 51.2 per cent.	34.8
Yield of 2nd sugar from 68.1 Maunds rab at 7.4 per cent.	5
Total sugar	39.8

	Rs. A. P.
Cost of 39.8 Maunds of sugar	303 5 6
∴ cost of 1 Maund of sugar	7 10 1

7. It will be seen from the above statement that payment for labour has been low enough but from what has been observed, it is expected that by devising more careful methods in treating and storing the recovery could be enhanced in the next year from $1\frac{1}{2}$ to 2 per cent. higher than what has been obtained during the 1936-37 season. In arriving at costs, rates are entered for activated carbon and it should be noted that the activated carbon required for refining was manufactured in our works and the prices are based on actuals spent for the purpose. The bamboo baskets and pots could of course be only partly used for a two more working seasons but still one-third cost only has been debited for the manufacture of one season only as the difference caused thereby is negligible and somewhat questionable. In all other respects the figures of yield and cost may be considered as a fair average for the method of refining employed. There is one other point to which attention should be prominently made once again that, in the costing worked out in this paragraph, the cane should be charged at least Rs. 2.8 more than what has been assumed in the calculations. This will mean that the minimum price for cane should be Rs. 9.2 per ton.

8. Local dealers and consumers are availed of and no elaborate arrangements would either be required or justified for the purpose.

9. The supply is made at prices ranging between Rs. 6.8 and Rs. 7.8 per standard Maund, depending on the market value of refined sugar. This price was realised last year also.

10. Boora sugar find favour with some classes of consumers who have got religious scruples to avoid factory refined sugar. An account of its intensive "Tasteness" and accredited superiority of refining attached to moss curing, there is a market for the product though it is not possible to sell the same at a price cheaper than factory cured sugar.

12 and 13. It will be seen from the preceding page of cost of manufacture, that as a land owner I am getting nothing for all the investment I have made in procuring or purchasing the land on which I have been growing sugarcane. It will not certainly pay me anything unless my percentage of output of sugar from cane is considerably increased and I am also enabled to sell at a price 25 per cent. in excess of my present price.

14. The difficulties confronting manufacture have been fairly well overcome by me as in the neighbourhood of the cane fields, I own an up-to-date tannery run by steam engine and have been freely availing the facilities of the steam engine and boiler for crushing cane, making my own activated carbon, and storing, refining, etc., of the rab. It will of course be difficult for small cane-growers to have all these facilities and though steam engine has been utilised freely for working the power crusher, no change has been allowed under this head in the calculation shown in section 7.

It is difficult to suggest any practical or workable plan for manufacturing boora sugar in small scale unless the process is examined thoroughly and further investigations are carried out to ensure economy. As has already been pointed, there appears to exist a few directions wherein would lie possibilities to obtain a sugar output of 9 to 10 per cent. of cane and

unless this is practically realised in the next season, it would not be worthwhile for me to grow sugarcane and take all the trouble to convert the same into Boora sugar. It seems to me that it will be worthwhile for the Government to pursue the inquiry and investigate if the result of research would not yield results which will be beneficial to farmers owning small areas scattered all over the country. Though considerable welfare problems are tackled by Government any initiative taken by Government, in this regard would reduce poverty in distant villages.

It is my conviction that large scale sugar factories as obtaining in other parts of the world are not at all suited to the land tenure system obtaining in India and that, sooner or later, the large scale sugar concerns will be replaced by small scale factories as applicable to the Indian conditions. If one follows the rice milling industry in India it will be conceded without any hesitation that the prediction outlined above would be realised at some future date and that the realisation will bring in some wealth and occupation for the rural population. If the state would come into accelerate the march of events, the starting of additional large factories can be stopped to the lasting benefit of the public.



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